The musical language of Elliott Carter : analysis of selected works from the transitional period (1945-55).

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THE MUSICAL LANGUAGE OF ELLIOTT CARTER: ANALYSIS OF SELECTED WORKS FROM THE TRANSITIONAL PERIOD (1945-55)

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Description of PhD thesis:

THE MUSICAL LANGUAGE OF ELLIOTT CARTER: ANALYSIS OF SELECTED WORKS FROM THE TRANSITIONAL PERIOD (1945-55)

The music of Elliott Carter is held in high regard, but is noted for its complexity. Recent analytical studies have attempted to explain Carter's compositional method, often taking the composer's own writings as a starting point. These studies have concentrated on works from the later part of his career, which appear to be the products of consistently applied ideas and techniques. This "mature style" may be regarded as beginning with the composition of the Second String Quartet (1959). The purpose of the present study is to complement work on the later music by examining the works of the ten-year period from the Piano Sonata (1945) to the Variations for Orchestra (1955), during which the composer's style underwent radical change from "American neoclassical" to "avant-garde". The study begins with a discussion of the historical and aesthetic context impinging upon Carter's work in the earlier part of his career, including the concepts of neoclassicism, modernism and populism. This discussion will explore the reasons for the composer's dissatisfaction with the musical idiom of his pre-1945 works. This is followed by a chapter placing the study of Carter's work in the context of analytical studies of twentieth-century music, particularly those which examine the notion of transitional music. The purpose of this is to identify those analytical methods and techniques appropriate to the repertoire under consideration. The methods discussed here will play a part in the analyses which follow. These begin with an investigation of various aspects of Carter's technique, using relatively brief examples, and culminate in studies of complete movements, namely the first movement of the Piano Sonata, the second movement of the Cello Sonata (1948) and the first movement of the Sonata for Flute, Oboe, Cello and Harpsichord (1952).

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CONTENTS

LIST OF TABLES

LIST OF MUSICAL EXAMPLES

(CS=Cello Sonata, PS=Piano Sonata, QS=Quartet Sonata)

PART ONE: BACKGROUND ISSUES

CHAPTER 1: INTRODUCTION

The purpose of this study is the examination of a crucial period in the development of one of the major composers of the twentieth century. The sheer range and quality of Carter's achievement is a recommendation for attentive study. In a compositional career of approximately seventy years, Carter has written works in all the established genres of western music, has tackled (and synthesized) many of the central ideas of modernism and has written extensively on a broad range of musical and artistic topics.

Since the 1950s and '60s, Carter has held a unique position in contemporary musical life, playing a dual role of forward looking radical and traditionally rooted elder. He represents a line of continuity with the mainstream of musical modernism (Schoenberg, Stravinsky, Debussy), but he is by no means the blinkered conservative that this characterization might imply since he has engaged with some of the principal issues of radical modernism in the arts, such as the plural nature of experience and the importance of discontinuity and elliptical logic. He has attempted to address these in his music while maintaining a fundamentally traditional concept of the integrity of a work of art and the role of the author. That Carter has managed to produce works displaying a comprehensive command of large-scale form, without recourse to what he would see as the regressive easy options of minimalism or neo-romanticism (that is to say, without sacrificing his modernism), is possibly his most significant achievement. It is also significant that he has achieved this on his own. Characterized as an "individualist" by Arnold Whittall [Whittall 1977: 212], Carter is neither the product

of, nor the founder of a compositional "school". Although often bracketed with Olivier Messiaen and Michael Tippett because of the similarity in age and range of achievement between him and his two great contemporaries, Carter's aesthetic background is quite different. Unlike Messiaen's, Carter's achievements have not been rooted in the expression of fundamental religious belief, but in a consistent humanism. In this respect, Carter is more typical of later twentieth-century artists than the Frenchman. However, unlike Tippett, Carter has not sought to develop philosophical or psychological ideas explicitly in his works, but has expressed himself in purely musical terms. This has perhaps made him the "composer's composer" of the late twentieth century; a figure whose professional consistency and ever-fertile creative imagination provide an inspirational model for his contemporaries and for the younger generation.

It is, as Whittall states, "the extent and direction of Carter's stylistic evolution" [Whittall 1977: 212] which is particularly remarkable, prompting Pierre Boulez to describe Carter as "an astonishing example of an individual musician, a personality who found his own way, quite unexpectedly - as it always should be" [Boulez 1978: 8]. This unexpectedness results from the extreme dissimilarity between Carter's stylistic origins, which owe much to Copland and the neoclassical Stravinsky, and his subsequent development, which placed him at the forefront of the post-war avant-garde, alongside such figures as Boulez himself. Since the 1960s, Carter has developed a personal repertoire of compositional techniques and resources with increasing consistency. These include large-scale form-defining polyrhythms, twelve-note all-interval "key-chords", stratification of harmonic and rhythmic vocabularies, cross-cutting of formal sections and "metric modulation". However, during the 1940s

and '50s, Carter's ideas and methods were in a state of flux; principles of composition deriving from various sources were brought into conjunction, resulting in a fascinating interplay between the traditional and the innovative. This is not to say that the works of 1945-55 are significant only because they exhibit "transitional" features. Works such as the Piano Sonata (1945), the First String Quartet (1951) and the Variations for Orchestra (1955) are triumphant solutions of the compositional problems Carter set himself at the time and are masterpieces in their own right, not merely harbingers of the later Carter.

The period under consideration is dominated by chamber works. Like Schoenberg and some other composers during periods of radical stylistic transformation, Carter seems to have felt the intimate world of the sonata and string quartet to be a more appropriate medium for intense self-examination and experimentation than were the public domains of orchestral or stage music. The ballet *The Minotaur* (1947), may be regarded as a relatively conservative throwback to, or summation of, Carter's earlier style, while the Variations for Orchestra come towards the end of the period and may be seen as standing somewhat outside the main line of Carter's development, again because of its use of a relatively conventional form and also because of its reference to the styles of other composers. Other works include "etude" types [Harvey: 20] in which Carter concentrated on the smallest individual elements of musical language. The *Eight Etudes and a Fantasy* (1949) for Woodwind Quartet and the *Six Pieces for Timpani* (1950) exemplify this category. The massive First String Quartet (1951) is the linchpin of the period; a remarkable synthesis of the composer's ideas to that date and his first mature masterpiece. However, this too is a unique work in Carter's output by virtue of its 45 minute length

(most of Carter's subsequent major works occupy approximately 20-25 minutes.)

This study will examine a range of chamber works from the period, including the *Pastoral* for viola and piano (1940), the songs "Dust of Snow" and "The Rose Family" from *Three Poems by Robert Frost* (1942), *Warble for Lilac-time* (1943), *Voyage* (1943), the *Eight Etudes and a Fantasy* and the First String Quartet, but will focus principally on the three Sonatas (for Piano (1945), Cello (1948) and Flute, Oboe, Cello and Harpsichord (1952), hereafter referred to as the Quartet Sonata.) The Sonatas present a convenient unit for study as continuity of genre and scale is combined with an even chronological distribution and a clear stylistic sequence. The Piano Sonata has been described by Schiff as a work which "looks in two directions" [Schiff 1983: 123], being both a summary of elements of Carter's earlier style, and a transitional work in that it prefigures elements of his mature style. The Cello Sonata is more obviously transitional; it is the last of Carter's works to employ a key signature, the first to employ the device of metric modulation and the first to exploit the contrast between instrumental "characters". The Quartet Sonata was written in the immediate wake of the First Quartet and embodies some of Carter's newly-forged techniques, but in a more relaxed manner.

Carter's use of the title "Sonata" would seem to denote a multi-movement instrumental work, free of any specific literary or programmatic elements - at least, these are the features that Carter's three Sonatas have in common. However, their individual relationships with the body of tradition that the term "sonata" invokes are quite different. The Piano Sonata maintains links with a Beethovenian ideal - the two-movement form, with a turbulent sonata structure balanced by a serene slow-movement, perhaps suggests a parallel with Op.111, while the use of fugue and the

opposition of tonal poles of b flat and b natural evoke the "Hammerklavier" Sonata. The Cello Sonata, like its predecessor, employs cyclic themes, but aims at a neoclassical balance of movements (perhaps recalling Hindemith) - fast (ternary), scherzo, slow, fast (rondo). The Quartet Sonata, however, leaves classical models further behind. In the relationship of its three movements, the emphasis is on evolution and growth rather than balance and symmetry. Each movement is longer and formally, rhythmically and texturally more complex than its predecessor. Furthermore, there are no cyclic recurrences of thematic material between movements. Indeed, the Quartet Sonata seems freer in form than almost any of Carter's other works from the transitional period. An acknowledged influence was that of Debussy, whose Sonata for Flute, Viola and Harp may be the work's closest "ancestor" [*CEL*[1]: 229].

An essential part of the study will be the evolution of an analytical method flexible enough to enable the demonstration of both contrasts and continuities between the three works; in other words, a method suitable to the study of "transitional" music. This will necessarily involve a discussion of the nature of transitional music and of current analytical approaches to it. The work of other analysts of Carter's music will be considered in this context, as will Carter's relationship to other composers of transitional music.

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[1] *CEL* denotes a reference to *Elliott Carter: Collected Essays and Lectures, 1937-1995* edited by Jonathan W.Bernard (Rochester, N.Y.: University of Rochester Press, 1997). This volume updates the previous collection of Carter's writings, *The Writings of Elliott Carter: An American Composer Looks at Modern Music*, compiled, edited and annotated Else and Kurt Stone (Bloomington and London: Indiana University Press, 1977), represented by the abbreviation *WEC* in the current text. References to Carter's writings will identify their appearance in the later collection except in the case of some shorter articles and programme notes which Bernard excludes.

An important preliminary to the theoretical and analytical part of the study will be an examination of the historical and aesthetic background to Carter's stylistic transition. An investigation of formative influences and the contemporary context will enable the analyses to be carried out with due sensitivity to the composer's unique situation and his response to it. The structure of this thesis will, therefore, be as follows, tracing a line from the general to the particular:

Part One: a discussion of the historical and aesthetic background to Carter's transitional period and of analytical and theoretical issues germane to it; this will include an investigation of the nature of transitional music and of appropriate analytical approaches to it, a comparison of Carter's transitional period with those of other twentieth-century composers and an evaluation of the work of other analysts of Carter's music.

Part Two: an overview of aspects of musical vocabulary and syntax in works of the period, focusing primarily on the role of harmonic and thematic techniques and processes in the creation of large and small scale structures. This section will deal with individual aspects of Carter's musical language (pitch fields, voice-leading and thematic structure), using brief examples from a wide range of works from the period. The areas of rhythm and form will not receive separate attention here for the following reasons. Carter's rhythmic innovations, probably the most obviously new aspect of his musical language, have already been discussed more than adequately elsewhere (see Schiff 1983 and Bernard 1988). It is difficult, perhaps meaningless, to discuss "form" in isolation from the elements of musical "content", and it will become obvious in investigating the various techniques Carter employs that they all have formal implications.

Part Three: analytical studies of movements from the three Sonatas, namely the first movement of the Piano Sonata, the second of the Cello Sonata and the first of the Quartet Sonata. This section will draw on the concepts outlined in Part Two, and show how particular techniques function in the context of specific works.

CHAPTER 2: HISTORICAL AND AESTHETIC BACKGROUND

An investigation of Carter's stylistic transition should begin with an overview of the foundations of his musical language in the mid-1940s, which, in turn, requires an understanding of the historical and aesthetic background. This is a large and complex area. The remarkable course of Carter's development was the result of the interaction of a wide variety of forces, none of which was experienced by Carter alone, but whose combination produced a unique reaction in his creative consciousness, causing him to metamorphose from being merely a child of his time to become one of its prime movers. The main sources of information regarding Carter's reactions to his milieu are his collected writings (especially the earlier *WEC*, see Chap.1, footnote 1), which include many of the reviews he wrote for the periodical *Modern Music* in 1937-1944, and the series of extened interviews with Allen Edwards[1], compiled during 1968-70 and published in 1971.

The aesthetic issues affecting Carter's development may be summarized by representing them as opposing poles on axes of artistic principles (see Table 2.1).

Table 2.1 Aesthetic axes

1.	expressionism	----------	neoclassicism
2.	modernism	----------	conservatism
3.	elitism	----------	populism
4.	cosmopolitanism	----------	Americanism

[1] Edwards, Allen *Flawed Words and Stubborn Sounds: A Conversation with Elliott Carter* (New York: W.W.Norton, 1971).

Such a representation necessarily demands explanation and qualification. For example, it is by no means justifiable to equate neoclassicism exclusively with populism; Stravinsky hardly saw himself as an educator of the masses. However, this schematic representation provides a useful framework for considering Carter in relation to the major artistic issues of the inter-war years.

1. Expressionism and Neoclassicism

Carter was born in 1908, just as the expressionist movement in the arts was beginning to reach its height. He therefore came to maturity during a period when various forms of reaction against expressionism, whether artistically or politically motivated, were prevalent. His own writings and reminiscences reveal an equivocal relationship with expressionism which was not resolved until the late 1950s.

The polemical confrontation which developed between serialism and neoclassicism, with Schoenberg and Stravinsky as the central protagonists, may, by the 1950s and '60s, have come to seem the result of opposing solutions to common compositional problems (especially after Stravinsky's late "conversion" to serialism), but for composers of Carter's generation, that confrontation was the central issue of the 1920s and '30s. During Carter's youth, artistic life in New York was characterized by an atmosphere of high-minded devotion to art for its own sake. The cause of modern music was well served by the adventurous programming of Stokowski and the activities of the International Composers' Guild and the League of Composers. As a young man, it was music of the "ultra-modern" school which first fired his imagination and prompted his decision to become a composer. Most of this music

may be regarded as "expressionist" or "experimental":

> During this whole period...I was much more interested in the very advanced music of the time than I was in anything else and thus came to know the music of Ruggles and Ives, particularly, and Bartók and Stravinsky and the three Viennese - all the new music that was being done in New York in this, a very active period. [Edwards: 41]

> I can't give a date, [for the decision to become a composer] but certainly *The Rite of Spring* was a very important and meaningful work, as were several of the works of Varèse like *Intégrales* and *Octandre*, and certainly the later works of Scriabin, particularly *Le Poeme de l'extase*, *Prométhée*, and the last preludes and sonatas, as well as Ives's *Concord Sonata* and some of his songs. They were all very exciting and beautiful to me, and it was as a result of hearing and thinking about them that I decided to try composing. [Edwards: 45]

Carter's interest in the music of Scriabin is symptomatic of the popularity of mystical and theosophical ideas among the artistic community during this period, and was the result of his acquaintance with the pianist and mystic Katherine Ruth Heyman, whose devotion to the Russian composer produced something of a vogue for Scriabin among American musicians of her generation (including the composers Charles Griffes and Dane Rudhyar). [Schiff 1983: 14]

In 1924, Carter was introduced to another influential figure, with whom he developed a lasting, if somewhat equivocal, relationship. Initially Charles Ives acted as a mentor to Carter, introducing him to much new music, encouraging him to compose in a complex avant-garde idiom and effecting an introduction to the Dean of Harvard for him. However, the balance of the relationship was later challenged by the younger man's increasing realization that the visionary radicalism of Ives could not sustain meaningful musical communication unless disciplined by a more practical approach to performance. Ives's influence on Carter consisted less in his transcendental mysticism, than in his critical approach to music which appeared too

simple, an approach which, ironically, led Carter to regard Ives's own attitude as naïve.

The music of the composers of the Second Viennese School did not become familiar to Carter until a business trip with his father to Vienna in 1925 gave him the opportunity to purchase as many of the scores of Schoenberg, Berg and Webern as were available [Edwards: 43]. From this point, however, he developed a lasting interest which survived his later anti-expressionist period:

> I had my own sort of very early "Expressionist" or avant-garde period, against which I reacted at the time of the depression, and to which I have since returned in a certain sense...ever since the beginning I've always liked the music of Schoenberg, Berg and Webern - as much of it as I knew. I was the head of the American ISCM when we gave the first all-Webern concert in New York - largely at my behest, because I was especially interested in Webern at that time (about 1952). I've always been interested in these three composers and have never had any "reservations" about them. My "anti-Expressionist" attitude had to do only with what I myself wished, for a certain period, to do as a composer. Later I began to see the Viennese music as more relevant and suggestive in this respect. [Edwards: 61-62]

This continuing interest is borne out by reference to some of Carter's reviews of this music in the 1930s and '40s, for example:

> Hearing again von Webern's *Five Pieces for String Quartet* with their rarefied, delicate atmosphere, and Berg's *Four Pieces for Clarinet and Piano*, or Bartók's *Second Violin Sonata*, we experience not the sterility which is the easy and complacent brand-term now so frequently applied to music of that period, but the great beauty of imagination and very special feeling. [*WEC*: 77-78 ("Stravinsky and Other Moderns in 1940", *Modern Music*, 17, 3 (Mar.-Apr. 1940))]

In an article on "Expressionism and American Music", published in *Perspectives of New Music*, 4,1 (Fall-Winter 1965) [*CEL*: 72-83], Carter engages in his most thorough discussion of the nature of expressionism and draws parallels between the music and ideas of the Second Viennese School and those of their

American contemporaries such as Ives, Cowell, Varèse and Ruggles. One of the main functions of the essay is the rehabilitation of the reputations of these composers, a task to which Carter, whose aesthetic standpoint traces a curve, at first veering away from theirs and later returning, may have felt himself particularly suited. In this essay, Carter focuses on two characteristics of expressionism, drawing on the following quotation from a paper by L.Mittner:

> The two main artistic procedures of expressionism are the primordial utterance (*Urschrei* [...])and the imposition of an abstract structure, often specifically geometric, on reality. [*CEL*: 78]

The desire to evoke the "primordial utterance" is a symptom of the "urge for [...] intensification of expression", which Carter finds strongly represented in the music of Ruggles and Rudhyar. It is also reflected in Ives's *Essays Before a Sonata*, which has several points of contact with Schoenberg's writings, particularly in Ives's desire to exalt the inner world and his emphasis on "substance" or content, rather than on form or superficial beauty. The second of these characteristics, "the imposition of an abstract structure", finds a close parallel in Berg's complex numerological plans and in the serial method in general. However, the emphasis among the Americans on experimental techniques and their rejection of conventional means of expression relates their aesthetic more strongly to the radical modernism of the Futurists and other mavericks rather than the extended traditionalism of the Second Viennese School.

The anti-expressionist period to which Carter refers was as much politically as artistically motivated. He admits that he found himself in sympathy with those who regarded expressionism as a symptom of the supposed hysteria of German culture:

> The whole Expressionist point of view had come, at a certain point, to seem as if it were part of the madness that led to Hitler...Many people felt - and I certainly was one of them (perhaps not rightly) - that the

> whole German cult of hyper-trophic emotion could have been held responsible for the kind of disaster we were witnessing then in front of our noses (certainly Brecht came to hold this view). This is why, in my opinion, many of us became interested for a time in neoclassicism as a way of "returning to reason" and to a more moderate point of view about expression, as well as to a more accessible vocabulary. [Edwards: 60-61]

The rise of fascism in Germany and Italy, combined with a long-standing francophilia, led Carter to feel that Paris was the natural place for him to continue his musical studies after completing his Master's degree at Harvard in 1932. In particular, Carter was drawn by the reputation of Nadia Boulanger who taught at the Ecole Normale de Musique [see *CEL*: 281-292]. Boulanger gained this reputation through the success of her American pupils, especially the first of these, Aaron Copland, who studied with her between 1921 and 1924. During the 1920s, Boulanger also taught Virgil Thomson, Walter Piston and Roy Harris, composers of widely varying styles and techniques who nevertheless shared a broadly neoclassical orientation. The outstanding gifts Boulanger had to offer as a teacher were a fervent belief in the role of the artist as craftsman and a remarkable understanding of the techniques of modern music. The former, which clearly placed her in the neoclassical camp, eventually led her to reject music which did not subscribe to this aesthetic. Thus while Copland was studying with her in the early 1920s, Berg's *Wozzeck* was considered worthy of serious interest, but by the time Carter came to study with her a decade later, such music was looked upon with distaste [Edwards: 51]. Boulanger's favoured model for young composers was Stravinsky, whose latest works were discussed exhaustively in her classes. Thus Boulanger became, in Charles Rosen's words, Stravinsky's pedagogical surrogate [Rosen: 72]. Carter's reminiscences regarding her continually emphasize her high-principled devotion to the

craft of composition and, in particular, the importance which she accorded to a thorough study of counterpoint [Edwards: 52-55].

The extent to which Carter absorbed the values of the Boulanger circle is seen in a 1946 article on the American composer who perhaps embodied her ideals to the highest degree, Walter Piston ["Walter Piston", *The Musical Quarterly*, 32, 3 (July 1946), also in *CEL*: 158-175]:

> To have helped to establish a deep understanding of the value of craftsmanship and taste here and to have given such persuasive exemplifications of these in his works is highly important for our future. For, not having as ingrained a respect and love for high artistic ideals as Europeans have had, we have often slipped into the trivial, chaotic, and transitory. Piston's work helps us to keep our mind on the durable and the most satisfying aspects of the art of music and by making them live gives us hope that the qualities of integrity and reason are still with us. [*CEL*: 174]

As is evident from some of the passages already quoted, Carter's anti-expressionism did not last. In the context of the Second World War, the disciplined restraint of emotion which was such an important principle of the neoclassical aesthetic, came to seem more like repression and denial, and its reliance on borrowed material and attitudes began to appear shallow and inadequate. A rereading of Freud during the mid-1940s reinforced the notion that the civilizing and rational aspirations of neoclassicism were merely avoiding the consequences of the grisly self-knowledge which mankind had begun to achieve at the turn of the century:

> After a while [...] it became clear to me [...] that we were living in a world where this physical and intellectual violence would always be a problem and that the whole conception of human nature underlying the neoclassic esthetic amounted to a sweeping under the rug of things that, it seemed to me, we had to deal with in a less oblique and resigned way. [Edwards: 61]

Of course, this passage represents the composer's later rationalization and

justification of his viewpoint and actions and it should not, therefore, be taken as a comprehensive explanation of the matter. Other, personal and pragmatic reasons for Carter's stylistic evolution may be found of equal importance to psychological and political ones.

2. Modernism and Conservatism

The axis of modernism and conservatism, although running parallel to a certain extent with that of expressionism and neoclassicism, is by no means identical to it. Radical modernism excludes both the ironic use of the past characteristic of neoclassicism and the emotional continuity with the past characteristic of expressionism. On the other hand, conservatism can be detected in works of both Schoenberg and Stravinsky in the late 1930s and early '40s, following the emigration of both these composers to the United States. Carter, although initially attracted by the liberating daring of modernism, later grew impatient with its apparent lack of discipline and its failure to engage the interest of the public. In the late 1940s and early '50s his early interest revived as he sought new means of musical expression. However, he remained critical of the modernist aesthetic as it rose to prominence again in the work of the post-war European avant-garde [see Edwards: 76].

It is difficult to define radical modernism except in negative terms, that is, as a rejection of the past. This definition encapsulates the central historical problem of modernism, namely its inability to sustain the momentum of its first radical impulse without recourse to a reconciliation with traditional techniques and attitudes. The history of music, in common with that of the other arts, does not conform to the

modernist ideal of a progressive "improvement", but instead follows a cyclic pattern, in which periods of experimentation, reaction and consolidation rotate. In the course of this century, extreme modernism has flourished during those periods when cultural continuity with the past has been called into question most acutely; the period surrounding the first world war and the aftermath of the second world war. In each case, the desire of modernist artists to create a "Brave New World", independent of all but the most forward-looking elements of the past, remained frustrated. The limited capabilities of performers and performance technology and the conservatism or apathy of the public have been important factors in this frustration. However, the isolating effect of the divorce from tradition on individual artists may also bear some responsibility for the relative brevity of extreme modernist movements. Many composers have found difficulty sustaining a radical outlook and have sought to re-establish links with their predecessors and the public by reaching an accommodation with tradition.

A characteristic symptom of the need to find a replacement for reassuring traditional certainties is the urge to construct theories. The growth of the importance of theory to composers this century is such that it has led one writer (himself a composer and theorist) to state that he finds "the notion of a composer who is not also a theorist incomprehensible" [Perle 1990: 23]. However, it is also symptomatic of the condition of twentieth-century music that the ideas exposed in these theoretical works may often be more revolutionary and interesting than the compositions supposedly based upon them.

Although short-lived, the Italian Futurist movement was prototypical for later manifestations of modernism, especially in its fierce iconoclasm and (often naive) faith

in technology. Various other European composers, among them the Czech Alois Haba (1893-1973) and the Austrian Josef Hauer (1883-1959) (both classic examples of composers obsessed with the need to create a new theory) experimented with alternative methods of pitch-organization, paralleling those of the Second Viennese School but not sharing their expressionist aesthetic. However, it was in the New World, far from the source of European musical tradition, that the spirit of modernism seemed to flourish most freely. An American musical historian accounts thus for this phenomenon:

> The geographical peculiarities of the United States - its enormous spaces and varied terrain - and the pioneering spirit that these fostered have tended to shape the country and its people in a quite different mold from that of the Old World. Early settlers were forced to rely largely upon their own ingenuity, making do with resources at hand in responding to the harsh demands of an unfamiliar environment, and something of the pragmatic invention and improvisation encouraged by this experience has been preserved in the national character. In addition, social forms have tended to develop in a less conventionalized and structured way than in Europe. The resulting tradition of tolerance toward a broad range of individual differences has been supported by the belief that one should make of one's life whatever one wishes, even to the extent of defying generally accepted norms. Though mythologized - and trivialized - in the popular media to the point of meaninglessness, the ideal of the "rugged American individualist" has a concrete historical basis in the special circumstances of the nation's development. [Morgan 1991: 296]

This analysis explains the unashamedly experimental nature of much American music and the relative reluctance of American composers to band together into schools or movements. However, the "uncompromising individualism" [Morgan] of figures such as Ives, Edgard Varèse (1883-1965), Harry Partch (1901-1974), Conlon Nancarrow (1912-97) and John Cage (1912-92) should not blind us to the fact that various personal and professional associations played an important role in the development of a "tradition" of experimentalism in American music. It is interesting

in this respect to compare Carter's perceptions of the situation he lived through with the conclusions drawn by a later scholar of the period:

> The main difference [between European and American expressionism], as always, is that the state of American musical life was so inchoate that a revolutionary movement in this art would necessarily be less well thought out, less focused, and more of an affair of individuals only agreeing in a general way, hence less corrosive of the fundamental aspects of what seemed to all a moribund musical tradition, since the situation was not seen with any clarity - and for that reason tended to dissipate itself in superficialities and absurdities, as so often happens even today. [*CEL*: 76]

The unfavourable comparison with European music is regarded as an example of uninformed prejudice by David Nicholls in his assessment of American modernism:

> There is a commonly held view, particularly among those concerned primarily with European musical traditions, that the American experimental movement developed accidentally, in isolation, and in a naïve and undisciplined way. It further considers the composers associated with experimentalism as amiable eccentrics, whose works are far less interesting than the anecdotes about them. This view is clearly wrong. The composers discussed here [Ives, Henry Cowell (1897-1965), Charles Seeger (1886-1979), Carl Ruggles (1876-1971), Ruth Crawford (1901-1953) and Cage], as representatives of experimentalism's first half-century, had a clear sense of direction both individually and collectively. Their music and ideas are rigorous and highly disciplined. [Nicholls: 218]

Nicholls stresses the co-ordinating effect of the pedagogical and theoretical work of Charles Seeger (a composer for whom Carter has little respect). In particular, Nicholls views the ideas contained in Seeger's essay "On Dissonant Counterpoint" (published in 1930) as laying the foundation for much of the compositional practice of Cowell, Ruggles and Crawford. However the cohesion of this group was short lived; Cowell eventually developed his own remarkably forward-looking theory based on the mathematical relationship between pitch and rhythm and on the synthesis of stylistic diversities; Ruggles, as Nicholls admits, "owes as much to

late Romanticism as to modernism, and lies essentially to one side of the main thrust of American experimentalism" [Nicholls: 3]; Crawford and Seeger turned away from experimental music in the later 1930s to devote themselves to ethnomusicological investigation. The ideas of these composers left little mark on musical life in general, swept as it was in the 1930s and '40s by a wave of conservatism and in the '50s and '60s by a second wave of radicalism. Only in the wake of the revolutions of total serialism and indeterminacy could their achievements be re-evaluated, although, as Carter notes in the essay previously quoted, this re-evaluation was still the result of a reaction to European developments [*CEL*: 72].

The "recurring preoccupations" of the "ultramoderns" have been summarized as follows by Nicholls:

> 1 extreme chromaticism of both melody and harmony;
> 2 tone-clusters and noise;
> 3 the use of new or unconventional instruments (both electronic and acoustic) and/or of conventional instruments in an unusual way;
> 4 rhythmic complexity, both simultaneous and successive;
> 5 implied or actual polytempo and/or polymetre;
> 6 implied or actual spatial separation of groups of instruments;
> 7 independent organisation of the various parameters of a musical line or idea;
> 8 large-scale and/or small-scale structuring of form, using extra-musical devices and processes, including numeration;
> 9 graphic notation and/or semi-improvised music;
> 10 works which are indeterminate of their performance. [Nicholls: 218]

Points 1, 4, 5, 6, 7 and 8 are also characteristic of Carter's own later music and thus reveal an affinity with some of this group's ideas, although his avoidance of electronic instruments, improvisation and indeterminacy embodies the conservative side of his nature.[2] However, the characteristic of American experimentalism most troublesome to Carter is its bold eclecticism. Ives, in particular, deliberately challenged

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[2] For Carter's views on improvisation see Edwards: 78-9, on aleatoric music see Edwards: 97-8 and on electronic instruments see *CEL*: 222.

conventional notions of stylistic integrity by producing works in both traditional and revolutionary manners and by mixing these manners within single works. Carter, like Ives, wished to find musical analogues to represent the plurality of experience in modern America. However, in Carter's eyes, Ives abrogated his responsibilities as a creative artist too often by neglecting to bring his works to a performable state and by allowing borrowed material to dominate his music to the extent that it detracted from the communicative purpose of the work. The criticism contained in Carter's review of the *Concord Sonata* ("...more often original than good...")["The Case of Mr.Ives" (*Modern Music*, 16, 3 (Mar. 1939) also *CEL*: 87-90] exemplifies the younger man's attitude towards his elder. However, later re-evaluations reveal an underlying sympathy with Ives's ideas and problems, even if Carter is ultimately ambivalent about his former mentor's true stature:

> One could say that Ives was unable completely to digest his experience as an American and make it into a unified and meaningful musical expression. The effort of remodelling the musical vocabulary to meet his own personal vision, almost without encouragement or help, was too great, and too often he had to let hymn tunes and patriotic songs stand for his experience without comment. ["Shop Talk by an American Composer" *The Musical Quarterly*, 46, 2 (Apr. 1960), also *CEL*: 214]

> Thinking about Ives has been particularly fruitful to me: about how he calls into question matters of style, coherence, and even the integrity, the "seriousness" of serious music - and especially thinking about the whole question of his inclusion of popular songs and hymns, which has been constantly perplexing. Sometimes, as in the *Concord Sonata*, his music seems like the work of an extraordinarily accomplished and skilled composer, particularly the "Emerson" movement, where all the motivic material is so highly organized and so closely interconnected, as are the harmonic materials. And then there are other pieces that seem to wipe all this aside and do something else. I have the impression that Ives must have known very much what he was doing and thus must have had many different intentions as a composer - sometimes to write pieces in a high style and at other times to write sort of angry vaudeville pieces. [Edwards: 63]

Carter has also been a perceptive critic of that other characteristic of modernism, its obsession with pseudo-scientific theories. His review of Joseph Schillinger's *The Schillinger System of Musical Composition* correctly pinpoints "the assumption that the "correspondence" between patterns of art and patterns of the natural world can be mechanically translated from one to the other by the use of geometry or numbers" as the "basic philosophic fallacy" of his theory. ["Fallacy of the Mechanistic Approach", *Modern Music*, 23, 3 (Summer 1946), also *CEL*: 15-16] However, he clearly found some of Schillinger's ideas suggestive, particularly the notion of rhythmic "interference patterns" which he exploited in the First Quartet and the Quartet Sonata. The exhaustive nature of Schillinger's classification of harmonic resources relates his work to that of middle-European theorists such as Haba and to the later development of pitch-class set theory in the 1960s and '70s. Carter has a strong link with this tendency as can be seen in his compilation of a "Harmony Book" (a two volume catalogue of all possible three- to six-note sets together with possibilities for combination and succession), beginning in the early 1960s.

In opposition to the strain of radical modernism, the twentieth century has experienced a persistent and powerful conservative tendency. This has manifested itself in music perhaps more strongly than in any of the other arts. Several factors have contributed to this tendency. The growth of historicism during the nineteenth century made artists more aware of the inherent value of earlier works of art and caused them to question the attitude that saw the history of art as a triumphant "progress" from past to present. As historical awareness grew, so did the artist's sense of being dominated by the past and unable to match its achievements, of being born too late to express oneself unselfconsciously and with originality. Responses to

the burden of the past varied from outright rejection (the course of extreme modernism) through ironic distortion (neoclassicism) and the reinterpretation of classical ideas in modern terms (the path taken by Schoenberg, Bartók and many others) to submission to the past and stylistic continuity with it (Strauss, Rachmaninov). (See Straus 1990: 1-20 for a wide-ranging discussion of these issues.)

The establishment and standardization of the economic foundations of musical performance and publication played its part in the creation of a "canon" of acknowledged masterworks of the eighteenth and nineteenth centuries. Pieces whose "greatness" had already been universally endorsed were safer investments for the publisher and impresario, whereas the promotion of contemporary music became an increasingly risky venture. As the market for cultural products expanded in the industrial age, "progressive" artists found themselves increasingly marginalized, addressing themselves to an informed elite who constituted an ever dwindling proportion of the total audience. Conservatism thus has two main roots; (i) the needs and anxieties of the artist; (ii) the expectations of the general public as influenced by the economic strategies of music's marketers. For some, the reconciliation of these factors was relatively straightforward, for others it was a source of continual difficulty.

For American composers of the inter-war years, the personal and economic factors contributing to a conservative aesthetic were closely bound up with social and political factors, which will be discussed in the remaining sections of the chapter. The economics of American musical life, through an unfortunate irony, operate in direct opposition to the radical experimentalism encouraged by its social structures. The theme of the financial difficulties of the serious musician in the United States runs

throughout Carter's writings.[3]

However, the unfavourable distribution of economic patronage was not the only factor in the decline of the fortunes of the "ultramoderns". In "Expressionism and American Music", Carter draws attention to the role played by influential interpreters of modern music:

> The two important rivals in presenting modern music to the large musical public were Leopold Stokowski - an irrepressible experimenter, in those days, who played Schoenberg, Varèse, and Ruggles, and was a supporter of the more extreme "ultramodernists" - and Serge Koussevitsky, also dedicated to the new, but really more interested in the Franco-Russian schools and in launching the (then) younger generation of American composers [Copland, Harris, Piston, Schuman], giving them the kind of enthusiastic support he had previously given to young Russians in Europe...In the end Koussevitsky's energy and persistence won a larger audience for the new American neo-Classical, folkloric, and populist school and adherents of other esthetics were more and more bypassed and forgotten. [*CEL*: 73-4]

3. Elitism and Populism

As the century progressed and the political practice of democracy grew and spread (if somewhat erratically), attitudes towards the arts began to change. The traditional view of artistic endeavour as the province of a cultured minority came to seem inappropriate in a social structure based - at least in theory - on the needs of the majority. Many artists responded to this challenge in the 1930s and early '40s by

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[3] See for example "The Composer's Viewpoint", *National Music Council Bulletin*, 7, 1 (Sept. 1946) also *CEL*: 3-5, "The Composer's Choices", Radio Broadcast (c.1960) also *CEL*: 210-214, "Shop Talk by an American Composer", *The Musical Quarterly*, 46, 2 (Apr. 1960) also *CEL*: 214-224, "The Milieu of the American Composer", *Perspectives of New Music*, 1, 1 (Fall 1962) reprinted in expanded form as "The European Roots of American Musical Culture" in *CEL*: 62-72, "The Orchestral Composer's Point of View", from *The Composer's Point of View: Essays on Twentieth-Century Music by Those Who Wrote It*, ed.R.S.Hines. (1970: University of Oklahoma Press) also *CEL*: 235-250.

attempting to deal more realistically with social issues in their work. However, style, as much as subject matter, was an important factor in developing a "populist" idiom. A simplification of style, resulting in a greater transparency of language, would enable the straightforward communication of the "message" of the work.

Two economic and political phenomena of the 1930s motivated the development of a populist movement in the arts; the severe economic depression and the rise of fascism. In the face of these threats to the security and stability of everyday life, the experimental aspect of much contemporary music seemed irrelevant at best and dangerously alienating at worst. In place of the introspective, speculative aesthetic of modernism, populism favoured alternative views of the arts; either as a vehicle for socio-political comment, warning or exhortation to action, or as a form of entertainment, conveying messages of consolation and offering escapist fantasies.

The characteristics of populism could be discerned throughout Europe and America, forming part of the general reaction to the radical atmosphere of the 1920s. Ironically, the social climates of quite different regimes favoured similar approaches. In the Soviet Union, the reaction against modernism took the form of official suppression of avant-garde works, which were censured as "formalist", and the cultivation of "socialist realism", an essentially conservative idiom marrying traditional means of expression with themes exalting the simple virtues of ordinary people. In Nazi Germany, too, a quasi-populist culture was manufactured by the state as a means of ideological control. The challenge facing artists in the western democracies was to make their art socially relevant without falling into the predictable banalities of the "official" art of totalitarian regimes.

In the United States, the principal figure in the popularization of serious music

was Aaron Copland. Copland's initial popular success, on his return from Paris and Boulanger in 1924, rested on the freshness and vigour of his incorporation of jazz elements into his music. However, in later works, such as the Piano Variations (1930) and the *Short Symphony* (1932-3), he began to develop a more abstract style which critics felt to be "austere" and "esoteric". At the same time, inspired by the example of European models such as Les Six, he formed a "Young Composers' Group". Faced with indifference and hostility among public and performers alike, Copland felt obliged to reconsider the relationship between artist and audience:

> During these years I began to feel an increasing dissatisfaction with the relations of the music-loving public and the living composer. The old "special" public of the modern music concerts had fallen away, and the conventional concert public continued apathetic or indifferent to anything but the established classics. It seemed to me that we composers were in danger of working in a vacuum. Moreover, an entirely new public for music had grown up around the radio and phonograph. It made no sense to ignore them and to continue writing as if they did not exist. I felt that it was worth the effort to see if I couldn't say what I had to say in the simplest possible terms. [Copland, quoted in Berger: 26-7]

Copland found the basis for the stylistic simplification he sought close at hand in the folk-music of Latin America, the Caribbean and his native America. Diatonic melody and rhythmic energy and elasticity became the essential elements of the new style. In practical terms, he aimed at a broader audience than the concert-going minority by writing for films (*Of Mice and Men* (1939), *Our Town* (1940), *North Star* (1943), *The Red Pony* (1948)), for schools (*The Second Hurricane* (1937), *Outdoor Overture* (1938, band arrangement 1941)), for radio (*Music for the Radio (Saga of the Prairies)* (1937)), for the theatre (*Quiet City* (1939) and most importantly, for the ballet (*Billy the Kid* (1938), *Rodeo* (1942), *Appalachian Spring* (1943-4)).

Furthermore, Copland felt he had a duty to promote a wider understanding of

music in general and modern music in particular, through writing and lecturing, as is demonstrated by his books *What to Listen for in Music* (1939) and *Our New Music* (1941), his frequent contributions to the periodicals *Modern Music* and *The Musical Quarterly* and his occupation of the post of lecturer to laymen at the New School for Social Research from 1927 to 1937.

Copland, and members of the Young Composers Group associated with him, had broadly left-wing sympathies and actively participated in artistic projects forming part of the Works Progress Administration during the "New Deal" period. Even members of the ultramodern school tried to accommodate social issues within an avant-garde framework; Cowell, Seeger and Crawford were all members of New York's Composers' Collective during the early 1930s.

When Carter returned to the United States in 1935, populism had effectively ousted ultramodernism as the dominant characteristic of American music. Having followed the example of Copland and others in pursuing studies in Europe, Carter naturally found himself involved in the same circles as these composers. He began to work as a reviewer for *Modern Music* in 1937. In the same year he became musical director of Ballet Caravan under the aegis of Lincoln Kirstein. Kirstein commissioned both Copland's *Billy the Kid* and Carter's *Pocahontas* (1939), which were premiered on the same occasion.

At this time, Carter's views on the function of music in society corresponded closely with the populist mainstream, although he maintained a certain degree of sympathy with composers of a more radical outlook:

> It's true that Varèse, whom I used to see occasionally, especially during the time when he was rehearsing my chorus *To Music* with an amateur group, seemed very melancholy during this period, which was turning

> toward new, more populist artistic aims, thus putting into question the more experimental attitudes of the best artists of his generation. It was easy for me to sympathize with both the old and the new of that time. During my studies and after, so many disastrous human situations resulting from the depression, from the Moscow trials, and from the Nazi-Fascist dictatorships haunted me. It was hard not to feel that very simple human needs were unmet and that the high art we knew seemed cruelly remote from this. Surrounded by so much violence and so much need, one couldn't help wondering whether such a thing as advanced modern music with its elite audience wasn't just beside the point. [Edwards: 59]

The only work of Carter's based on explicitly populist subject matter is *Pocahontas*, which explores the consequences of an early confrontation between native Americans and European settlers. However, according to his later reminiscences, the composer was not entirely convinced of the ideological acceptability of the plot:

> At that time the American past was being whitewashed, I suppose in a desperate attempt to make the "melting pot" idea work. I myself had misgivings about the "colonialist" aspect of the subject, particularly as I have some Indian blood of my own, but hoped to make it a parable of cooperation. [Edwards: 57]

Although the subject matter of *Pocahontas* had something in common with that of ballets by Copland, its musical substance was varied and often complex. The unfavourable popular and critical reception of the ballet was one of the factors prompting Carter's adoption of a simpler musical style in the early 1940s. ["The Composer's Choices", *CEL*: 210-214]

This was far from being the only problem which Carter experienced in working within a populist framework. By nature, Carter was ill-disposed towards the urge for simplification enshrined within populist ideals. The same critical attitude which caused him to view the work of early modernists as naive applied to the shallow pretensions of early "American musical folklorists" and would-be popularizers:

> Like all other music, that intended for the masses can be good or bad.

> Effectiveness in putting across a message is no criterion of artistic value. Both Eisler and Blitzstein have shown that real musical imagination and originality can be of great service to their political points by adding character and incisiveness. But such music on the recent TAC [Theatre Arts Committee] evening, gallery-funny pieces like Henry Brant's *Marx Brothers* or Morton Gould's *Sonatina* or *Child Prodigy*, or gallery-serious cantatas like Kleinsinger's *I Hear America Singing* or Earl Robinson's fresher *Ballad for Americans*, begin to sound thin and the attitude of the composers condescending. Their apparent assumption is that the masses don't know anything about music and never will. I wouldn't be a bit surprised if works like the Sessions *Quartet* or the Harris *Symphony* were to become more popular than these self-conscious and restricted compositions ever will be. ["American Music in the New York Scene, 1940", *Modern Music*, 17, 2 (Jan.-Feb. 1940), also *CEL*: 53]

It is noteworthy that the American composer for whom Carter expresses the most consistent praise with the fewest reservations is Roger Sessions. Sessions studied for a while with Boulanger, wrote in a style owing much to Stravinskyan neoclassicism in the late 1920s and early 1930s and formed a close personal association with Copland, including the "Copland-Sessions Concerts" of 1928-31. However, Sessions was never deeply committed to the populist ideal, or to the aesthetic of neoclassicism. Like Carter, he maintained an interest in the composers of the Second Viennese School and came to stylistic maturity only after a long considered appraisal of a variety of influences. Carter clearly drew inspiration from Sessions's consistent and uncompromising sense of purpose and from his engagement with "the most serious and important issue that has faced contemporary music...the task of finding new forms for the new material." ["Current Chronicle: New York, 1959", *The Musical Quarterly*, 45, 3 (July 1959), also "Roger Sessions: Violin Concerto" in *CEL*: 175-180]

In his own works, too, Carter revealed his unease with the restrictive aspect of populism. Whereas Copland, in his Piano Sonata (1939-41) and Violin Sonata (1942-

3), was able to wed the newly-forged musical language of the stage works to the abstract and personal medium of chamber music, Carter's instrumental works of the period (especially the *Holiday Overture* (1944) and the Piano Sonata (1945-6)), introduce a greater degree of formal and contrapuntal complexity into the populist idiom than is typical of it. Carter reports that Copland's first reaction to the *Holiday Overture* was to criticize it as a "typical, complicated Carter score" [Edwards: 58]. It would probably be fair to say that whereas Copland achieved his definitive compositional "voice" through the revision of musical language accompanying his espousal of populist values, Carter suppressed his natural inclinations in order to conform to an ideological ideal.

Perhaps the most frustrating aspect of the populist ideal of mass communication through serious music was that it proved to be unattainable. The conservatism of American audiences was proof against even the most ingratiating of offerings of living American composers. Carter's reflections on his earlier aspirations reveal a complete rejection of populism and a certain resentment of the lack of appreciation for his efforts demonstrated by contemporary audiences:

> They were - and still are - in the position I was in as a little boy, when it comes to modern music - they aren't able to distinguish very much about any of these things; they just know it doesn't sound very much like Brahms, and that's about all, as far as I can see. In fact, I probably should have known better than to try writing works like my First Symphony and *Holiday Overture* in a deliberately restricted idiom - that is, in an effort to produce works that meant something to me as music and yet might, I hoped, be understandable to the general musical public I was trying to reach for a short period after writing *Pocahontas.* I did this out of a natural desire to write something many people could presumably enjoy easily at a time of social emergency, but I did so without appreciating just how serious was the audience paralysis engendered by this lack of interest in or familiarity with the new in any of its artistic forms. Thus I wrote music which escaped the average listener, despite what seemed to me its directness. [Edwards: 58-58]

After the second world war, the aggressive elitism of a new generation of European modernists established itself as the cutting edge of musical thought. In this environment, the fortunes of composers such as Copland declined somewhat, although he did make efforts to come "up to date" with the development of serialism. However, for those like Sessions and Carter who placed a high value on the expression of complex thought in art, the new *Zeitgeist* was a liberating one, even if they felt that the Darmstadt generation was afflicted with the same naivety as the earlier "ultramoderns"[4]. The culmination of Carter's rejection of populism came in 1950-1, the period during which he retreated to the Sonora Desert in Arizona in order to work on his First String Quartet:

> I decided for once to write a work very interesting to myself, and so say to hell with the public and with the performers too. I wanted to write a work that carried out completely the various ideas I had at that time about the form of music, about texture and harmony - about everything. [Edwards: 35]

4. Cosmopolitanism and Americanism

The desire to create a recognizably American music, independent of the European models which had dominated their predecessors, obsessed American composers of the early twentieth century, whether populist or modernist in outlook. However, the means of achieving this were greatly disputed. Both schools of thought recognized Ives as the first truly original American composer. Ives himself had had a conventional musical education (that is, one based on mastering the language and forms of nineteenth-century European music) at Yale under Horatio Parker. Although

[4] See Edwards: 76, 83 and 117-8.

Parker did not share Ives's interest in the experimental (which Ives owed essentially to his father), the technique which Ives acquired through his studies was a crucial part of his musical make up.

The debate which followed centred on whether American composers could still learn from the Europeans, or whether they should strike out on their own and sever all links with the Old World. Battle lines were clearly drawn between the graduates of the "Boulangerie" - Copland, Sessions, Carter, Piston *et al* - and the "ultramoderns". Sessions stood at one extreme of this opposition, having spent most of his life between 1926 and 1933 studying in Europe and before this, having "apprenticed" himself to the Swiss emigré Ernest Bloch. At the other extreme stood figures such as Harry Partch, who received no formal musical training, grew up and spent most of his life in remote parts of the western U.S.A. and rejected almost all aspects of traditional European music, including such basic characteristics as its instruments, its system of tuning and its conventions of performance.

Carter, although clearly inclining more towards Sessions than to Partch, was well aware of the need for American music to achieve maturity and self-recognition through independence from European thinking [see "American Music in the New York Scene, 1940" *Modern Music*, 17, 2 (Jan.-Feb. 1940), also *CEL*: 48-53]. In an article on the early American "nationalist", Henry Franklin Belknap Gilbert, he summarizes the stages of development of an autonomous musical tradition:

> At the time when Henry Franklin Belknap Gilbert was making his effort to write, as he put it, "some American music", nationalism was the subject of wide discussion by critics, musicians and composers, including Gilbert himself. A general historical sequence of periods had been formulated to cover our national musical evolution: first, foreign domination, and imitation of non-native art music; second, collection of and familiarization with indigenous folk songs and dances; third,

> invention of a style consistent with folk material though without using actual quotations; and fourth, the musical millennium, emergence of the national masterworks written by native composers with a large native background and inheritance...this thesis gave folk songs a basic position as the root from which each national music culture is to grow. All the elements comprising the "manner": rhythm, melody, harmony, and form, evolve from this germ and generate a style that is to be expressive of our native kind of "matter". To put it another way, in a search for a means of expressing the "matter" of our national consciousness, it was assumed that composers would inevitably follow this historical pattern.
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> The two interrelated doctrines of historical stages, and the antitheses of matter and manner, combined with our special brands of individualism and of progress, have deeply influenced the thinking of our contemporary composers, particularly those of nationalist intentions. The conflict of opinion over which of the four stages we are now in is the basis of many present arguments; while the manner-matter problem perpetuates itself in questions as to the "abstraction" in contemporary music and its "neo-classicism" or "neo-romanticism". ["American Figure, with Landscape", *Modern Music*, 20, 4 (May-June 1943), also *CEL*: 134]

Carter criticized exponents of self-conscious "folklorism" in the same manner as he did the naive radicalism of the "ultramoderns"[5]. His own temporary adherence to the neoclassical style may be regarded as an example of a borrowed "manner", which he later abandoned because it could not express the full complexity of the "matter" of his musical thought. The post-war era, which saw the development of the mature styles of Carter and Sessions, perhaps represents the true beginning of the "fourth stage" of American musical development. However, the existence of a variety of conflicting ideologies, producing an exciting plurality of possibilities, seemed to him to be the sign and guarantee of the musical health of the nation:

> Nevertheless, important composers are already with us in America. Ours is a varied musical scene: the music-makers, few as they are in comparison with other artists, write in every kind of style, whether it derives from Europe, is boldly original, extreme, conservative, crude, or highly polished. They make up a complex, interesting picture, as

[5] See Edwards: 31.

interesting and much more individual than many a European scene. Their quality, competence, and seriousness is on a generally high level. Indeed, the variety of current esthetic attitudes is proof that the question of musical competence is no longer the problem it was. One might almost say that American music was born when these differences began to take convincing shape in works. ["American Music in the New York Scene, 1940" *Modern Music*, 17, 2 (Jan.-Feb. 1940), also *CEL*: 49]

CHAPTER 3: ANALYTICAL CONTEXT

The analytical context in which Carter's works of 1945-55 are placed is two-dimensional. On one axis, we should examine "neoclassicism", the musical idiom within which the *substance* of Carter's earlier works was formed. Along the other axis lies the concept of "transitional" music, which may provide several parallel models for analysing the *processes* of change undergone in Carter's oeuvre. Examination of neoclassicism will involve assessing various analytical approaches to a body of work composed in the period c.1920-45, which, while far from homogenous, exhibits many recognizable common features of aesthetic and musical style. Examination of "transitional" music, on the other hand, necessitates consideration of a wider variety of musical styles, which are themselves, of course, in a state of flux and therefore present the analyst with methodological problems. The present chapter surveys some important issues and approaches within these two areas, in order to arrive at provisional principles for the analysis of Carter's transitional music. The chapter concludes with a brief critical resumé of analytical work already undertaken on this music.

1. Analysis of Transitional Music

It may be debated whether there really is any such thing as "transitional music". It is relatively easy to view almost any work as a half-way house between two others and thus the whole history of music is, in a sense, transitional. On the other hand, the same work may exhibit some form of internal coherence which is *sui*

generis, requiring no explanation or justification in terms other than its own. All this is merely another expression of the familiar mathematical concept that a line may also be regarded as a set of individual points. It is no longer reasonable to view transitions in matters of artistic style as straight lines leading to pre-ordained goals, or to regard individual works as interesting only from the point of view of those projected goals. Therefore, as this study unfolds, although the "line" of Carter's development must be borne in mind, considerable space will be devoted to consideration of each of the "points".

The species of transition which is of principal interest here is that between tonality and atonality which took place during the early part of the twentieth century. This area has been a focus of considerable analytical interest in recent years[1], principally because of the quality of the music itself, but also because of the intensive reworking and refining of analytical ideas required in response to the variety and complexity of compositional procedures it displays. As Jonathan Dunsby observes,

> early twentieth-century music still conveys an effect of contemporaneity, confronting us with the mystery of what we are still learning to assimilate. There are analysts who believe that thinking about the music of this period is - apart from the special challenge of absorbing the music of our own age - the most important analytical thinking to be done.[...] It can be argued that in modern Western music there is no period less amenable to the idea of analytical models than this one; no period in which the very criteria for understanding any one piece have been more entailed in that particular piece; no period which was marked by such diversity of compositional practice, to the extent that the possibility of generalized analytical explanation may be doubted. [Dunsby 1993: ix]

The principal difficulty facing the analyst of music of this period is one of methodology. There are well-established ways of approaching tonal music and, to a

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[1] See, for example, Samson 1977, Kerman, ed. 1990 and Dunsby, ed. 1994.

certain extent, post-tonal music. Schenkerian techniques have proven to be so successful in the analysis of music of the "common practice" period (Bach-to-Brahms) that they have virtually become the established orthodoxy [Dunsby and Whittall 1988: 7-8]. Although no such orthodoxy exists for the repertoire of "classic" atonal music (pre-serial Schoenberg, Berg and Webern), pitch-class set theory - originally developed as a means of elucidating dodecaphonic music - has asserted itself as a powerful resource, which must be acknowledged by anyone attempting to make further inroads into this complex material. However, there exists a large body of music by composers as diverse as Liszt, Debussy, Strauss, Mahler, Scriabin, Ives and the early Schoenberg, Berg and Webern, which may be analyzed - partially - from either point of view, and which cannot, therefore, unequivocally be called either "tonal" or "atonal". The necessity for an historical category of "transitional music" arises not only from the overlap of repertoires examined by analysts of tonal and atonal music, but also from the seeming impossibility of producing convincing and comprehensive analyses of these works from a single theoretical standpoint. "The whole point of the music of [the] transitional period", according to Dunsby and Whittall, "is that it cannot be analyzed with reference to one type of pitch - structuring alone."[2] [Dunsby and Whittall 1988: 113]

Extensions of Schenkerian methods "forwards" into the atonal domain have been efficiently summarized by James Baker in his article "Schenkerian Analysis and

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[2] Recognition that a single theoretical basis may not provide a sufficiently broad basis for analysis is not confined to the field of transitional music. Analysts of tonal music have attempted to overcome this problem by developing synthetic or pluralistic methods (such as David Epstein's fusion of Schoenbergian and Schenkerian ideas in *Beyond Orpheus* [Epstein 1979], Christopher Wintle's concept of structure and counter-structure [Wintle 1985], or Kofi Agawu's conjunction of Schenkerian and semiotic techniques [Agawu 1991]).

Post-Tonal Music" [in Beach 1983: 153-186][3]. Baker divides the analysts he examines into two groups; firstly, those, such as Adele Katz, who after testing Schenker's methods against contemporary music, reject its applicability and propose that new methods are required, without suggesting what these might be; secondly, those who claim to find examples of prolongation and structural hierarchy in post - tonal music, either (a) by identifying tonal elements and progressions, or (b) by attempting to demonstrate the prolongation of dissonant sonorities.

A complementary tendency, the endeavour to explain certain aspects of tonal music through recourse to methods usually applied to the post-tonal repertoire, is most strongly represented in the work of Allen Forte. Forte has attempted to interpret aspects of works by Liszt, Mussorgsky, Debussy and even Chopin in terms of set theory [Forte 1987, 1988 and 1990]. An important concept here is the proposition that pc sets may be "prolonged" as linear middleground motives, rather than, as some have argued, functioning purely as surface motives.

Both approaches are vulnerable to the criticism that an accurate and sensitive analysis cannot be produced by forcing the music to "obey" one set of theoretical rules. The obvious reaction to recognition of this flaw is the adoption of a synthetic or pluralist methodology, based on the interaction of tonal and atonal theory. Something like a methodological consensus in the analysis of transitional music may be emerging in the Yale University Press series *Composers of the Twentieth Century*, under the general editorship of Allen Forte. Forte's own article "Schoenberg's Creative Evolution: The Path to Atonality" (*MQ* 64, ii, 1978) perhaps provided the model and inspiration by examining the work of a single composer - an acknowledged

[3] Also see Baker 1990 and 1993 for further thoughts on post-tonal voice-leading.

master of late nineteenth-century extended tonality and the prime originator of "classic atonality" - and showing, through analysis of a few key works in the decade 1900-1910, the extension and eventual abandonment of prolongational voice-leading techniques and their replacement by pc set relations as agents of structural coherence. This is also the approach of James Baker in *The Music of Alexander Scriabin* (1986) and Richard Parks in *The Music of Claude Debussy* (1989), the latter making extensive use of Forte's later addition to his theory, the pc set genera [Forte 1988]. These studies aim to portray the development of the composers' musical language as a continuous logical process, through a smooth "modulation" from one analytical orthodoxy (Schenker's) to another (Forte's). Early examples of the composer's work which exhibit conventional tonal *Ursatz* forms are followed by those in which tonal structural elements are implied but not actually present, and finally, by those in which no tonal background can be discerned. At the same time, atonal pc sets grow in importance from being mere foreground presences to being determinants of musical structure.

Baker's thesis hinges on the dual significance of certain pitch - configurations in Scriabin's music, most characteristically that in Table 3.1. This progression may

Table 3.1 Whole-tone invariance/dominant prolongation in Scriabin

f	b(=c♭)	f
d♭	g(=a♭♭)	d♭
b	f	b
g	d♭	g
$V_{♭5}^7$	♭$II_{♭5}^7$	$V_{♭5}^7$

be understood both as a dominant prolongation and as an example of whole-tone invariance (i.e. as a tonal and/or an atonal progression). Apparently, for Scriabin, the exploitation of the limited possibilities of transposition and complementation of the whole-tone scale was a stepping-stone towards the more general application of these techniques in the atonal universe. Baker attempts to show that despite the presence of both tonal and atonal elements in Scriabin's music, the works are still examples of the kind of organic, unified coherence typical of nineteenth-century tonal masterpieces:

> In Scriabin's compositions dating from around 1903-1909, tonal and atonal procedures - traditionally considered mutually exclusive - function inseparably within integrated musical structures. Atonal procedures are used only at foreground levels and overall coherence is guaranteed by the underlying tonal *Ursatz*. [Baker 1986: 268]

Baker feels that for this reason, he is able to work within the repertoire of orthodox Schenkerian techniques and that there is no need to invoke such concepts as "extended" or "hovering" tonality or "contrapuntal - structural chords" [Baker 1986: 269]. In practice this is not strictly true; there are examples in Baker's analyses of what, in all but name, are "contrapuntal-structural chords".[4] Furthermore, the innovative techniques of Scriabin's transitional works which Baker identifies - namely "(1) omitting explicit endpoints of conventional unfoldings at any level, including the background, and (2) loosening traditional vertical structures governing counterpoint so that lines which would ordinarily move in conjunction with traditional harmonic progressions are instead allowed to move out of synchrony" [Baker 1986: 268] - suspend and threaten to destroy any really audible sense of tonal function and produce exactly the sense of "hovering" Baker rejects.

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[4] In Baker's analysis of Scriabin's Op. 51/2, the structural 5th degree is supported in the background graph by what Baker describes as a "linear 4/2", which is clearly of contrapuntal origin. [Baker 1986: 56]

It may be argued that Baker's attempt to synthesize tonal and atonal elements into a unified whole is misguided, not merely because it plays down any sense of tension between the two, but because atonal elements are resistant to the kind of unifying coherence characteristic of tonal music. Two contrasting approaches to transitional music are now examined in an attempt to find alternatives to the Schenker-Forte synthesis.

The issues of the relationship between foreground and background, and the validity of extensions of prolongational concepts, are addressed by Derrick Puffett in his analysis of the Fugue from Tippett's Second String Quartet [Puffett 1986]. Unlike Baker, Puffett is reluctant to try to bind tonal and non-tonal elements into a unity. He begins by constructing a voice-leading graph with three structural levels, but finds that the means of elaborating the contents of one level to create the next do not correspond consistently with tonal prolongational techniques and therefore the "analysis breaks down" [Puffett 1986: 257]. In certain passages, according to Puffett,

> there is a discontinuity between foreground and background which cannot be bridged by an ever-increasing liberality in applying pre-existing concepts of prolongation. If such passages were to be reconciled with the more remote levels of structure, new concepts of prolongation would have to be found to do it. The line between "finding" a "concept" and cooking an analysis is as narrow as the challenge in Tippett to existing theory is wide. [:258]

Like Katz, Puffett tests analytical orthodoxy (Salzer's rather than Schenker's in this case) against musical fact and finds it wanting. However, he draws a positive conclusion from this finding; the "value" of the voice - leading graph is that it can establish "the exact nature of Tippett's tonal language in that it demonstrates, through its failure as much as through its success, the extent to which that language is tonal and the manner in which it is so" [:258]. Although his analysis is necessarily

incomplete, Puffett raises a crucial point, which challenges Baker's view that transitional music may still be organically unified through the relationship of hierarchical levels. Instead, he suggests that a disjunction exists between levels of structure, so that while "long-term harmonic movement can be represented in terms of a Fundamental Structure, [it] cannot be reconciled with all the movement at the foreground. This creates a discrepancy between harmonic and contrapuntal considerations, which, because it is structural, goes deeper than...essentially stylistic form and content questions..." [:260]

It may, of course, be argued that what Puffett describes as a "Fundamental Structure" cannot be regarded as such if its unifying power is not transmitted through all levels. However, the idea that a work which alludes almost constantly to tonal harmony, without actually being tonal, can be interpreted in terms of a disjunction between its structural elements is a striking and valuable one.

Puffett's reluctance to extend prolongational concepts beyond a certain limit is echoed in articles on Mussorgsky by Michael Russ [Russ 1990, 1996]. In contrast to Puffett's single method and Baker's attempt at synthesis, Russ employs a freely eclectic methodology. His graphic and symbolic analysis contains elements from a variety of analytical vocabularies; Schenkerian foreground prolongations, Schoenbergian tonal regions and Fortean pc sets, since "prolongation operates over relatively short spans in this piece, its large scale role being assumed by association, symmetries and motivic and fixed - pitch connections." [Russ 1990: 48] According to Russ,

> this; methodological eclecticism is justifiable in that no single analytical approach can do justice to Mussorgsky. It also stems from a belief that it is better, in transitional music, to bring together methods which, to

> the extent to which they are used, are applied strictly, than to adapt methods like Schenker's to new kinds of music; a multi-method approach may throw progressive and conservative elements into clearer relief. [Russ 1990: 49]

Russ's emphasis on "conjoining" rather than "synthesizing" elements represents an abandonment of strict organicism and perhaps fulfils Dunsby and Whittall's wish for a "useful acknowledgement of the symbiotic presence of distinct rather than synthesized features" in transitional music [Dunsby and Whittall 1988: 113]. The risk entailed in such a method is that the results may appear incoherent. Russ skillfully avoids this but also produces a parallel analysis along unadulterated Schenkerian lines (*à la* Puffett), which "complements and challenges" his first reading. [Russ 1990: 48] The pluralism of Russ's approach is thus multiplied since it offers two alternative views of Mussorgsky, one illustrating the importance of "realist" anti-organic elements in his music, the other showing how "purely musical" elements do in fact "create a higher unity" [Russ 1990: 61].

To summarize the foregoing discussion, it may be said of transitional music:
(a) that it may be observed to be organized on different hierarchical levels as tonal music is;
(b) that these levels may not be continuous in themselves or consistently and organically related to one another;
(c) that it may exploit the ambiguity arising from differing interpretations of certain pitch-configurations (as tonal harmonies, motives or pitch-class sets);
(d) that it may be appropriate (if not an inescapable necessity) to adapt techniques from complementary analytical methods in order to express these ambiguities and disjunctions;

(e) that the practices of individual composers and the unique context of individual works are as important as the *a priori* concepts of a given theory in performing an analysis.

2. Analysis of Neoclassical Music

While there are certain similarities between the stylistic transitions in Carter's music and in that of early twentieth-century composers like Schoenberg and Scriabin, there is an obvious difference in their starting-points. The musical language of Schoenberg's early maturity was late Romanticism, an idiom which still maintained a direct link with the harmonic principles operating at the time of tonality's birth some three-hundred years previously. That of Carter's early maturity was neoclassicism, which had evolved only since the First World War and which was already at a remove from tonal convention. Carter's stylistic transition was therefore from one post-tonal idiom to another and is perhaps more closely comparable with Stravinsky's late conversion to serialism and Tippett's change of direction with *King Priam*. The following discussion will attempt to establish the key questions in the analysis of neoclassical music.

Probably the most important issue in the analysis of neoclassical music is that of the degree to which the adoption of the materials of tonality entails the continuing presence of tonal functions and hierarchies. Harmony and voice-leading often become separated from one another in analyses of the neoclassical style, since they appear to have differing relaionships with their counterparts in the "common practice" era.

Attempts at explanation of the harmonic usages of Stravinsky and others have

thrown up a collection of terms such as "pandiatonicism", "polychords" and "bitonality", which describe the symptoms of neoclassical harmony rather than diagnose the underlying condition. The issue is touched on by Carl Dahlhaus in his article "Tonality: structure or process?" [in Dahlhaus 1987: 62-80]. Dahlhaus states that in twentieth century music, the concept of harmonic process has given way to that of harmonic system. (This is the result of a shift of emphasis in a dialectical relationship rather than of a complete overthrow of one principle by another.) Harmonic process, by which Dahlhaus means the idea "that sonorities do not simply exist side by side, linked by melody or voice-leading, but have their own inherent momentum" [:66], began to take root in western music in the twelfth century and achieved its final flowering in the tonal music of c.1600-1900. Harmony as system, which consists principally of the composer's "freedom to posit axioms" without recourse to justification by appeal to "nature" or "history", re-entered western music in the twentieth century, most strikingly with Schoenberg's serial method.[5] Stravinsky's "freedom to posit axioms" included the development of a technique of layering or stratification of tonal areas. However, Dahlhaus suggests that this resulted not in the complete overthrow of tonal function, but in a tension between the dialectical poles of process (tonal function) and system (layering or stratification):

> If we wish to do justice to the complex techniques of superimposition in *Le Sacre du printemps* or to the ironically ingenuous ones in *The Rake's Progress*, we must not fail to appreciate that Stravinsky's neutralisation of tonal functional chords should not be understood as a given, so to speak self-contained fact which we have to accept for what it is, but as a procedure which can be comprehended - though not always without some effort. When a tonic is, so to speak crippled functionally by having a dominant placed on top of it, the listener should become aware

[5]Dahlhaus regards Schoenberg's own appeals to nature and history for justification of the twelve-note serial method as irrelevant.

> that this is the result of a conflict and not just a mute fact...the inner tension of what we call Stravinsky's static harmony is due to its suppressed dynamic element...[: 69]

It is the acceptance of complex superimpositions as "mute fact" that is a major weakness in some of Felix Salzer's analyses of music by Stravinsky and Copland in *Structural Hearing* [Salzer 1962]. Salzer employs the term "polychord" to describe pitch formations created through the superimposition of triadic elements, though he claims not to find it "accurate or indicative" because "the chord built on the bass will always be the stronger one, and it is the bass and its chord which will determine the chord grammatical status of the whole chord cluster. Polychord would thus be an adequate denomination only if both [or all three] chords would amalgamate on equal terms, which seems hardly possible." [: 192-193] Put so bluntly, this equation of bass with root function seems crudely inadequate, although it might be rendered more acceptable by the modification that a bass note will tend to be heard as a root in direct proportion to the degree to which the chord above resembles a third-based structure. Salzer's examples 416 and 472 [Salzer: Vol.2, 182-7, 234-7] show dissonant polychordal sonorities acting as "tonics" in Copland's Piano Sonata (1942) and Stravinsky' *Symphony in Three Movements* (1945), the former based around a superimposition of tonic and dominant triads of B flat minor, the latter on a superimposition of triads of G major and D flat major. The bass notes of these sonorities are regarded by Salzer as roots and the chords themselves as stable, thus, in the case of the Copland, "a fusion of tonic and dominant chords has taken place", while in the Stravinsky, there is a "prolongation of the polychord on G with the D flat chord as a secondary chord of fusion" [Salzer: volume 1, 194].

Salzer's next theoretical postulate is, however, even more problematic and is

the source of a long-standing controversy. This is the possibility of "the contrapuntal prolongation of dissonant chords, especially of polychords."[: 193] The problem with Salzer's analyses of the two works mentioned above is that they interpret harmonies as prolonged merely because they are recurrent. The Copland example revolves around exactly the kind of superimposition of tonic and dominant which Dahlhaus refers to with regard to Stravinsky (see above). Rather than explain this as a source of tonal tension, Salzer regards it as a self-contained fact, which can be "composed out" by means of motions into inner voices. [:194 and Ex.416].

Analyses such as these have prompted a critical response from, among others, Joseph N. Straus [Straus 1982a, 1982b and 1987]. Straus asserts that a theory is needed to account for surface style and deep structural organization and that this will entail "a systematic and coherent view of pitch organization at all levels" [1982a]. Straus rejects the application of the Schenkerian concept of prolongation to Stravinsky's music, but he retains the theoretical division of pitch relations into harmony and voice-leading, by formulating his theory as a response to two questions; if much twentieth-century music is organized around functional tone-centres, but these are not tonal in the traditional sense, then "(1) what is the nature of the tone centres?, and (2) what is the means of progression between the tone centres?" [1982a]. Straus's answers - respectively his concepts of "tonal axis" [1982b] and "pattern completion" [1982a] - are synthetic elements grafted on to an organic system of hierarchical levels. In this respect, Straus is no different from Salzer, although he is at least clearer in his exposition of new theoretical principles.

Straus's "tonal axis" is defined by three conditions: (1) it is formed from overlapping major or minor triads (such as e-g-b-d or e♭-g-b♭-d); (2) it must function

as a referential sonority (i.e. as a prominent foreground harmony); (3) it must embody a conflict or polarity between its constituent triads, this polarity being the principal determinant of the work's structure. Straus thus identifies the collection c-e-g-b as the "tonal axis" of Stravinsky's Symphony in C, embodying a conflict between C major and its mediant e minor. This finding is corroborated by the work of other writers on Stravinsky [Whittall 1988: 61-64], although Straus's interpretation minimises another important triadic relationship, that of the dominant - gbd - with tonic and mediant.

While the "tonal axis" may be a useful, if somewhat rigidly defined, concept, "pattern-completion" is more problematic. An unordered collection or set, "usually a tetrachord", is established as a melodic and harmonic "norm" in the foreground. The presence of all but one member of the "pattern" in contextually prominent roles creates the psychological expectation of the arrival of the missing member to "complete" it. The pitches of the pattern are thus "associated" across stretches of intervening material (rather than "prolonged" in the strict Schenkerian sense), forming a level of structure akin to a tonal middleground. The resulting relationship between foreground and middleground thus resembles the "motivic parallelism" observed by Schenker in many tonal works. However, while in tonal theory, motivic parallelism may be expected to fulfil only part of the structural role of deeper levels, in Straus's theory of post-tonal music it constitutes the whole of the middleground, thus apparently providing post-tonal compositions with a high degree of organic unity.

The concept of "association" rather than prolongation is potentially a useful one and is amplified in Straus's later work [Straus 1987]. However, in his work on Stravinsky, he does not make clear his criteria for the selection of particular pitches as carriers of greater structural weight than others and this inevitably weakens some of

his analytical observations. Furthermore, the idea that a psychological expectation of a particular pitch may be created is undermined when there may be more than one way to complete the pattern.[6] Whatever the value of the idea of pattern completion, it is doubtful that it can really be equated with voice-*leading*. It is noticeable that Straus nearly always identifies pitch-class sets which resemble tonal scale-segments and which therefore suggest a quasi-tonal goal-directed motion or a "gap-fill" construction, but the concepts of completion (which Dahlhaus would regard as a manifestation of harmonic system) and progression (harmonic process) are fundamentally dissimilar. Finally, the polemical stance adopted by Straus appears unreasonable. In dismissing attempts to find tonal or octatonic structures in Stravinsky's music as "fallacious" [1982b], he denies the possibility of the fruitful interaction of these elements with those of his own theory. By rejecting the validity of a pluralist approach to Stravinsky (the pluralist composer *par excellence*), Straus leaves himself open to the charge of misunderstanding the true nature of the post-tonal music he defends.

The work of Pieter van den Toorn [van den Toorn 1983, 1987, 1995, 1997] on Stravinsky's music offers some useful concepts for analysis of Carter's earlier works. Van den Toorn's work is based around the identification of the octatonic scale as a major component of Stravinsky's musical language. Phenomena such as the "polychord" g-b-d♭-f-a♭, which Salzer takes as the underlying prolonged sonority in the opening of Stravinsky's *Symphony in Three Movements*, can thus be shown to

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[6] For example, in Stravinsky's *Symphonies of Wind Instruments*, Straus identifies the tetrachord [0,1,3,5] as the "pattern" [Straus 1982a]. Between rehearsal figures 6 and 8, the second flute line revolves around the pitches c♭, d♭ and e♭, allegedly creating the expectation of the e♮ which arrives at figure 8. There is no reason in Straus's theory why b♭ would not fulfil the function of "pattern completer" equally well. (A similar problem exists with the pattern completion in the third flute part in this passage.)

belong to a single octatonic collection rather than being formed from the juxtaposition of triads. While the octatonic scale itself is of little importance in Carter's music, the relationship between the "closed" symmetrical structure of octatonicism and the "open" structure of functional tonality, which van den Toorn explores, is of great significance.

In discussing the relationship between octatonic and diatonic elements, van den Toorn notes that the "dominant seventh" collection [0,4,7,10] and the "major/minor third unit" [0,3,4,7], both important quasi-tonal components in Stravinsky's neoclassical style, are also both subsets of the octatonic collection. However, a V^7-I cadence is not possible within a single octatonic collection [van den Toorn 1983: 330]. Thus,

> "tonic resolution" often surfaces as a kind of terminating convenience in contexts either octatonic or octatonic-diatonic in conception, so that, apart from qualifying "impurities" in the concluding simultaneity itself, the "resolution" may seem incidental to pitch organization generally. [: 330]

An important example of the above occurs at the end of the *Symphonies of Winds*, where the pervasive octatonic sonority g-b-d-f/b♭-d-f-a♭ eventually "resolves" on to c-e-g-b-d. This progression involves a re-interpretation of the octatonic sonority; during the course of the work, it appears as a static, referential sonority, but the final cadence invests it with a dynamic "dominant" quality which van den Toorn describes as a "retroactive function" [: 337]. Van den Toorn's approach thus allows for the possibility that tonal function may play an intermittent role, rather than being either ever present in distorted form (Salzer) or entirely absent (Straus).

A subtle analysis of the elusive and multivalent qualities of Stravinsky's references to tonal sonorities and functions (in his serial as well as his "Neoclassical"

works) can be found in Whittall 1982.[7] In the *Anthem* of 1962, Whittall discovers "various embeddings" of tonal progressions within one another, "the effect of [which] is to disperse local tonalities into general atonality" [Whittall 1982: 11]. This technique parallels that found in the first movement of the earlier *Serenade in A*, in which the illusion of a tonal Fundamental Structure is created through emphasis on the pitches a, e and a, but in which these pitches tend not to be heard "as members of a single, integrated, unifying process, rather than as the representation of one process enclosing a second process."[Whittall 1982: 13]

> Although the tones A and E are basic to its structure, it is difficult to think of them as in a fifth-relation of anything approaching the traditional diatonic kind. Rather, they are contrasted, polar alternatives. More radically still, they may be the principal, centripetal agents of the breakdown of what might have been a unified, goal-directed structure, following traditional 'laws of continuity' and 'rules of continuation'. [Whittall 1982: 13]

The other principal figure of Neoclassicism, Paul Hindemith, has also been the subject of analytical enquiry which may be drawn upon in this debate. David Neumeyer's *The Music of Paul Hindemith* [Neumeyer 1986]- another in the Yale series - evolves an analytical method based to a large degree upon that composer's theoretical pedagogy. Although intended expressly as a tool for the "description" of the music's technical features and not as a "prescription" for its correct interpretation, Neumeyer's explanation of his method clearly suggests a parallel with the views on post-tonal music of Puffett and Joseph Straus:

> It is...not a reductive theory as that term is usually employed nowadays, despite its five hierarchic stages. The stages are used to separate the different processes or components of the music and not to demonstrate a closed system of structural levels. Only Stage III can properly be called integrative, and it is the one most open to individual

[7] Also see Pople 1996, for amplification and critique of Whittall's ideas.

> interpretation....It is the essence of Hindemith's pedagogy and compositional practice that he permits different levels of definition for all the musical elements. In effect, any one of the elements has its own continuum of definition from greatest clarity at one end to obscurity or even randomness at the other, and the resulting network of definition levels is the most important factor in determining the technical character of a piece. [: 49-50]

In other words, in place of the Schenkerian/Salzerian system of organically related structural levels, Neumeyer posits a looser network of levels, whose relationship is not governed by any *a priori* laws or forms but is flexible and variable from work to work. ("There is no fixed relationship of the primary elements but any number of possibilities for their "balanced cooperation."" [:49, footnote 1.]) This model has much in common with Puffet's notion of the disjunction between structural levels in Tippett, and Dunsby and Whittall's emphasis on symbiosis rather than synthesis in post-tonal music.

The analysis of neoclassical music thus involves consideration of the following;

(a) the juxtaposition of triadic elements and the extent to which the sonorities thus formed may retain a tonal function;

(b) the interaction of the "open" tonal system and "closed" symmetric systems;

(c) voice-leading through tonal "prolongation" or through non-tonal "association".

3. Analysis of Carter's Music

Before the task of outlining a suitable analytical method or methods for Carter's transitional music is undertaken, the work of other analysts of Carter's music will be reviewed. The first attempt at comprehensive exegesis of Carter's work was made by David Schiff in 1983 in *The Music of Elliott Carter.* Schiff's study is the product of a

close personal association with the composer and this is both its strength and its weakness. As an introductory account, it is exemplary, combining enthusiasm and clarity of exposition. However, Schiff rarely extends far beyond the information supplied by the composer with regard to overall form and basic musical materials. Nor does he concern himself deeply with analytical methods and their applicability to Carter's music, making only brief reference to pc set theory. Thus, despite some essential insights into Carter's central ideas and techniques, Schiff does not achieve the necessary independence from the source of his information for analytical detachment.

With the making available of Carter's manuscript scores and sketches the way became open for more independent analytical work. Jonathan Bernard's article "Spatial Sets in Recent Music of Elliott Carter" [*MA*, 1983] was one of the first products of this availability. Bernard's approach is based primarily on the application of set theory to Carter's mature music, modified by his work on Varèse which emphasizes the spatial aspect of harmony [Bernard 1981]. (The article deals with the way in which complex textures are built up from the combination and duplication of intervals and sets.) Pitch, rather than pitch-class, is stressed, which is a significant departure from orthodox set theory, and furthermore, the nexus set/set-complex principle of Forte's theory is not brought into play, as it conflicts with the principles of organization of harmonic vocabulary outlined in Carter's own notes. Bernard manages to give more detail and substance to "flesh out" the outlines suggested by Schiff. However, this is still far from a complete view of Carter's musical language. The concentration on spatial harmonic matters treats Carter's music in a rather one-dimensional manner since it excludes the temporal, developmental aspect which is so important to Carter. Furthermore, as Bernard acknowledges, the task of analysing a

whole movement by Carter in the bar-to-bar detail assayed in the five to ten bar segments tackled in the article, would be almost prohibitively demanding [Bernard 1983: 32]. Bernard's subsequent published work on Carter has similarly concentrated on single aspects of the composer's technique and approach [Bernard 1988, 1995, 1996].

David Harvey's doctoral dissertation *The Later Music of Elliott Carter: A Study in Music Theory and Analysis* [Harvey 1989], appeared almost in fulfilment of Bernard's challenge. Harvey's thesis is an attempt at a comprehensive description of Carter's musical language as it is embodied in three major works (the Second String Quartet, Double Concerto and Concerto for Orchestra). Analyses of these works follow several introductory chapters which place Carter in the context of American composition and theory, outline his background, influences and early career, and develop an analytical method suitable to various types of atonal music. The latter is formed from a consideration of Fortean set theory together with criticisms and modifications of it by such writers as William Benjamin, Christopher Hasty, Jonathan Bernard and Joseph Straus. The product is a method which employs Fortean notation to describe significant foreground components and also "background sets", which may appear to dominate a passage through the repetition and contextual reinforcement of particular pitches, and attempts to describe pitch-continuity in terms of intervallic "process" and symmetry. While acknowledging Bernard's approach as one among several which have helped to refine pc set theory into a more "context-sensitive" analytical method [Harvey 1989: 41-6], the latter's "architectural" approach is criticized as portraying Carter's music as rather static, and since Harvey's avowed intention is to produce analyses which account for "perceived continuity in the domain

of pitch" [: 69], he takes equal note of analysts such as Benjamin and Hasty whose bias is towards "process" rather than "structure".

Bernard's review of Harvey's work [Bernard 1990] pinpoints certain slightly problematic features in what is otherwise a "usefully stimulating" publication. Bernard quibbles with Harvey's description of Carter as an "empiricist", suggesting that a comparison with the American composer-theorists such as Babbitt and Martino should not denigrate Carter as "lacking in rigour". A more serious criticism is that Harvey's criteria for the segmentation of the scores and the selection of particular pitches and configurations for middleground or background priority are not always explicitly clear.

A wide-ranging methodological eclecticism would seem to be a natural approach to analysis of the music of Elliott Carter, given the plethora of musical influences - from Ives, to Mozart, to African drumming, to Stravinsky - that he acknowledges. Harvey brings a suitably broad range of analytical ideas to bear on Carter's later works. However, his one extended analysis of one of Carter's transitional works, the Cello Sonata (1948), is disappointing. After exposing some of the work's generative motivic cells,[8] Harvey attempts a graphic representation of the first movement in terms of the "structural progression of focal pitches." The results, however, are sketchy and inconsistent - at some points showing inappropriate quasi-tonal "voice-leadings" and at others simply juxtaposing elements without explaining their supposed relationship. (See Bernard 1990: 348 for further criticism.) Bernard [: 354] warns against the assumption that structural levels operate in Carter's music in the manner "construed by Schenkerian theory and those theories of 'transitional' or

[8] Harvey bases his analysis on the premises set out in Schiff 1983 [: 137]. However, an alternative explanation of the movement's basic pitch materials can be found in Kies 1984 (see below, Chap.5, pp. 125-6).

post-tonal music based, however generally or partially, on Schenkerian models." It remains to be seen whether the works of 1945-55 respond to analysis on these bases.

To summarize, the following are the main points which must be understood by the analyst of Carter's transitional music:

1. Carter has left some useful clues, in the form of sketches and writings, about his compositional methods, but these can only inform the beginning of an analytical approach, they cannot tell the whole story.

2. All writers are in agreement that the dense complexity of Carter's scores makes detailed analysis of large-scale works a daunting prospect. The prevailing image is of a near-impregnable fortress being assailed by a battery of unwieldy siege-engines. For an analysis to be effective, it must ultimately render its subject more readily comprehensible. Inevitably, this entails simplification of the work's complexities, but on the way to this final view, the complexities must be fully explored and response to the work rendered even more complex. In the case of Carter's music this represents a considerable challenge in terms of stamina.

3. The analyst must recognize that at the beginning of the period under consideration, Carter was writing within the established idiom of neoclassicism, and take account of methods currently available to approach this idiom, but must also be aware that Carter may have (consciously or otherwise) subverted that idiom, given his later radical departure from it.

4. Analysts should also accept that the transitional nature of this music necessitates bringing a variety of methods to bear it, while recognizing that these methods should be exploited only as far as they yield meaningful results that do not distort the facts represented in the compositions themselves, and also being aware that the use of different methods may yield complementary or contradictory results.

PART TWO: ELEMENTS OF CARTER'S MUSICAL LANGUAGE IN THE TRANSITIONAL PERIOD.

CHAPTER 4: KEYS, MODES, FIELDS

1. Diatonic fields

In common with the musical languages of his principal models at that time, Stravinsky and Copland, Carter's was characterized, in the early 1940s, by a prevailing diatonicism. However, diatonic pitch-content must not be taken as an outward sign of conventional tonal harmonic structure, and we should therefore be wary of describing his music as being in particular "keys", as this term carries with it the assumption of an organic hierarchy of elements with pre-ordained functions. Accounts of this music which fail to address the fundamental differences between the key-relationships of tonal music and the varied pitch-structures of post-tonal music risk seriously misrepresenting both.[1] As David Harvey observes with regard to the second movement of the Cello Sonata, "'key" is usually only definable as a property of the scalar relationships of the pitches present at any given moment, rather than as a function of harmonic relation." [Harvey 1989: 34] In other words, we have diatonicism without a tonic, or any degree identities. It will be useful, in discussing this music, to develop a terminology which, while acknowledging both its prevailing diatonicism and its tendency to be organised around "tone-centres" (analogous but not identical to "tonics"), does not bind these two into the indissoluble unity that the term "key" implies.

The diatonicism of some of Carter's music, when taken in conjunction with its

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[1] Witness Wilfrid Mellers's description of bb.33-41 of the first movement of Carter's Cello Sonata: "In this passage the basic tonality is B major, which is, however, telescoped with D major and G sharp major, which becomes enharmonically A flat." [Mellers: 107]

avoidance of functional tonal relationships, may lead to descriptions of it in terms of the ancient church modes. Although modal writing was a characteristic of some neoclassical music, it is not really appropriate to describe Carter's works in these terms. The use of "modes" still implies triadic harmony and a (loose) hierarchy based on the "final" degree, neither of which could be said to be continuously in evidence.

Consideration of a passage from Carl Dahlhaus's essay "Tonality: structure or process?" [in Dahlhaus 1987: 62-72] will help to elucidate the nature of diatonic post-tonal music such as Carter's. Dahlhaus uses two principal criteria in order to distinguish between various types of musical language or "system"; they may be "open" or "closed" on one hand, and "centred" or "non-centred" on the other:

> The chromatic scale, if understood according to the principle of distance, as in dodecaphony, that is, without distinguishing between diatonic and chromatic semitones, is a closed complex - as is the pentatonic scale, which has no semitones at all. On the other hand, the overtone series, which can in theory be extended into infinity, is an example of an open system - as is major-minor tonality, whose ability to accommodate remote harmonies is unlimited.
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> Open systems are and must be centred, since, in a situation where there are no limits, the grouping around a central point seems to be the only way of ensuring systematic coherence. Similarly, closed systems may indeed also contain a tonic or principal note, yet having a centre is not necessary, as dodecaphony shows; and where a centre is prominent in a closed system - as in a mode in non-semitonal pentatonic music - it has the appearance of being a secondary structure or something that has been super-imposed. A centre is not essential in closed systems, though it is in open systems. A tonic in pentatonic music, where it exists, is, so to speak, an additional determining factor; in the overtone series and the complexes derived from it, by contrast, it constitutes the basis of tonal coherence. [Dahlhaus 1987: 67-8]

Dahlhaus's description of major-minor tonality as an open system requires qualification. The equal temperament system of tuning, adopted since the eighteenth

century, forced tonality into a closed, cyclic structure, consisting of twenty-four major and minor keys. One can only accept tonality as a genuinely open system if one refers exclusively to the just-temperament system of tuning which adheres strictly to the properties of the overtone series. Nevertheless, if one temporarily accepts a single tonic as the centre of the equal temperament system (as, for example, in Schoenberg's "Chart of the Regions" [Schoenberg, 1969: 20], a network of functional relations is set up which enables distinctions to be drawn between apparently identical keys in terms of their "relative", rather than "absolute" values. For example, if we take C major as tonic, the key of A major may appear as (a) the dominant of the supertonic, (b) the parallel major of the relative minor, (c) the subdominant of the mediant major, or in a large number of other possible relationships to the tonic. If one accepts that all these keys are different entities because they are defined by different relationships to the tonic, then Dahlhaus's view of tonality as an open system may be endorsed. With the removal of the notion of a tonic, the cyclic equal temperament system collapses in on itself and, as Dahlhaus states, the only relationship between pitches which remains is that based on "distances" between them, measured in semitones [Dahlhaus: 64].

The harmonic organization of Carter's later music is a clear example of a "closed system"; chords are categorized by their interval content (by counting distances in semitones) and distributed into separate "vocabularies", whose interaction, although rich and varied, is governed by reference to a pre-compositional scheme. Dahlhaus's assertion that a centre is not essential in closed systems is borne out by Carter's own attitude to the question of the importance of "absolute pitch":

> The actual notion of "absolute pitch" is not significant in my pieces. The pitches are chosen registrally as a matter of instrumental practicality. In fact, I frequently transpose parts of my pieces up and down, when I compose them, to try and decide in just which register they would sound most characteristic, given the instruments that are playing them. [Edwards: 110]

However, in Carter's earlier music, a variety of approaches to "centredness" are explored and the relationship between open and closed systems is very much a subject for investigation. We encounter passages of apparent pentatonic or modal simplicity, passages which exploit the ambiguity of one or two "false relations" or enharmonic changes, passages which give the appearance of "bitonal" organization and passages which display the kind of chromatic saturation normally associated with "atonality".

For the purposes of describing the pitch-content of the predominantly diatonic parts of Carter's music without recourse to the terms "key", "scale" or "mode", we will adopt the term "diatonic field". To describe a passage as being in the "diatonic field" of C, means only that its pitches are diatonic to the scale of C major, not that C is necessarily perceived as the tonic upon which all other pitches are structurally dependent. Italic notation will be used to identify diatonic fields. Thus *C* is "the diatonic field of C". (In set-theoretic terms, this is equivalent to set class 7-35 with the specific membership [11,0,2,4,5,7,9].)

The adequacy of the description given above may, however, be compromised by the possibility that a passage may suggest a "minor", rather than a "major", orientation. This point illustrates precisely the difficulties which may arise in separating diatonic content from tonal function. If, in a passage whose pitch-class content suggests *C*, the note a is given contextual prominence, an "a minor

orientation" will naturally be heard. This does not, in itself, invalidate the classification of the passage as being in *C*, since, as explained above, this only describes the content of a set, rather than establishing a hierarchy among its members. However, should the passage in question mimic certain conventions of the traditional minor mode - specifically, the variability of the seventh degree of the scale (the "sharpened leading note") - the classification of its diatonic orientation must be amended to account for this. Thus, for example, a passage in the diatonic field *a* will have an identical pitch-class content to one in *C*, except that in the former, the pitches g and g# will be interchangeable. (In set theoretic terms, 8-26 [7,8,9,11,0,2,4,5].) This phenomenon will be observed occasionally in Carter's music, but more usually, other means of complicating the sense of diatonic orientation will be encountered.

Carter often employs what may be described as composite diatonic fields. These are fields which are derived from two major scales adjacent in the cycle of fifths whose pc content therefore overlaps by six elements. Thus the diatonic field *C/G* contains eight pitch-classes, including the "false relation" f# -f♮. (This is equivalent to the set class 8-23 with the specific membership [4,5,6,7,9,11,0,2].) Occasionally, three adjacent major scales may be used; *C/G/D* contains nine pitch-classes, including two "false relations" f# -f♮ and c# - c♮ (equivalent to set class 9-9 [11,0,1,2,4,5,6,7,9].)

Conversely, diatonic orientation may remain ambiguous because there are fewer pitch-classes present in a particular passage than the seven constituting a diatonic scale or field. In this case, the presence or absence of the tritone relationship is the crucial factor. The collection (c,d,e,f,g,a) (set class 6-32 [0,2,4,5,7,9]) may be a partial representation of either *F* or *C*. This will be represented thus: *(F/C)*. A still smaller

collection, the set 5-35 [0,2,4,7,9], contains neither tritone nor semitone relations and may therefore be representative of one of three diatonic fields; for example (c,d,e,g,a) may be described as *(F/C/G)*.

An obvious parallel exists between the relationships among diatonic fields and those among tonal tonic and dominant key areas, the difference being that in a composite diatonic field, "tonic" and "dominant" are equal partners, the focal or central pitch-class(es) being determined by contextual factors rather than through inherent structures. Motion between diatonic fields also has a parallel with modulation in functional tonality (especially in Schoenberg's sense of motion between regions), in that certain pitches may play a pivotal role by being open to reinterpretation in different harmonic contexts. Motion may be smooth - to a field whose pc content has a maximum overlap with the preceding one - or abrupt - to a field which has relatively few pcs in common with the original. In the case of a smooth "drift", this may be effected by the introduction of a single new "false relation". In the case of abrupt "shifts", the enharmonic re-spelling of particular pitches is often involved. For example, the harmonic reinterpretation of leading notes as tonics in their own right (or *vice versa*) is an important part of the harmonic process of the Piano Sonata (a♯, the leading note in B major becomes b♭, the tonic of B♭ major).

The equation of various forms of diatonic field with pitch-class sets which has been introduced above may serve as a point of contact with Allen Forte's theory of pc set "genera" [Forte 1988]. Forte's theory seeks to establish "families" of pc sets, the members of which are related through holding certain "progenitor" subsets (trichords) in common. The sets which have been identified as significant in the classification of

Carter's musical language in the early part of his career - 5-35, 6-32, 7-35, 8-23, 8-26 and 9-9 - are all members of either Genus 11 (the "diatonic") or Genus 12 (the "diatonal"), which together form "Supragenus IV". 5/7-35 and 6-32 are members of both. Only 6-32 is a member of any other Genera (Genus 7, the "chroma-dia", and Genus 10, the "atonal-tonal"). In this respect, these sets represent a relatively tightly-knit group - almost a "closed system" - and thus perhaps demonstrate that Carter's interest in working with clearly delimited pitch vocabularies predated his systematic classification of chords in the "Harmony Book". The role of the pc set genera in the classification of "chords" and smaller segments of the musical surface will be examined in Chapter 5.

Three passages from Carter's earlier works will provide brief examples of his handling of these diatonic fields; the song *The Rose Family* (1942) offers the earliest and most straightforward of these examples, while two passages from the second movement of the Piano Sonata (1945) demonstrate similar techniques used in a more elaborate manner, taking us, in one case, to the edge of what can be explained in terms of diatonic fields.

(a) *The Rose Family*

Robert Frost's miniature is a satire on the mutability and fragility of referential meaning in modern poetry, in which the traditional concept of metaphor - one object standing for another - may be developed to absurd extremes.[2] The text is reproduced here;

[2]Gertrude Stein is the principal target of this satire, according to Schiff [1983: 92].

The rose is a rose,
And was always a rose.
But the theory now goes
That the apple's a rose,
And the pear is, and so's
The plum, I suppose.
The dear only knows
What will next prove a rose.
You, of course, are a rose -
But were always a rose.

The certainty expressed in the opening pair of lines is undermined by the subsequent "theory" that other objects may be symbolically or metaphorically regarded as "roses". These are listed in the order "apple...pear...plum", exhibiting a progression which has its own logic, but which takes us far from the literal concept of a rose. The next pair of lines represent the opposite pole from the certainty of the first pair; almost anything may conceivably represent, or be represented by, a rose. Meaning is therefore undermined and devalued. The final pair of lines contain an ironic twist; they return to certainty (with an echo of the word "always"), but admit the validity of metaphor within certain "understood" conventions (here the courtly compliment of a poetic lover).

Although the song (in keeping with the poem) is slight, its harmonic technique and language succinctly demonstrate many of the salient features of Carter's style. The poem's transformation from the apparent certainty of literal meaning to the uncertain world of symbolic meaning finds an analogue in Carter's music in the play between the closed system of pentatonic harmony and the rather more extended harmonic sphere of the cycle of fifths. Example 4.1 shows the score of the song with an analysis of its diatonic fields.

Bars 1-7, comprising the piano introduction and the first pair of lines, reflect

the meaning of the words by using rhythmic and harmonic ostinato. The naivety of the poem's sense here is conveyed by the use of a pentatonic scale on a flat - a♭, b♭, c, e♭, f. Although a♭ is emphasized by certain contextual factors (its position in the extreme bass, its metrical position of the first beat of each bar and the "arpeggiation" of the a♭ triad in the vocal part), others detract from its status as "tonic" (the absence of leading note g and subdominant d♭). The harmonic material of this section may, in fact, be defined as a continuous segment of the cycle of fifths: a♭-e♭-b♭-f-c. Significantly, this set (5-35) is the largest such segment which can be drawn from the cycle of fifths which contains no semitone relationships between its members. The absence of semitones makes the harmonic texture free of tension in the conventional tonal sense, but nevertheless leaves a feeling of ambiguity, because of the latent expectation that this segment of the cycle of fifths will be extended by two elements, in order to make up a complete scale or diatonic field. Thus, Carter is able to play on the paradoxical nature of pentatonicism within a tonal context; it may appear, on one hand, a "closed system", and, on the other, as an incomplete manifestation of a diatonic field.

Carter does indeed extend the cycle of fifths segment, bringing about a gradual, but increasingly rapid shift of diatonic orientation, which mirrors the progression in the poem away from the literal presence of the rose, towards the surreal symbol of "plum as rose". The first stage in this process is marked by the introduction of d♭ in the phrase "But the theory now goes" (bb.8-10), expanding the pc field from 5-35 to hexachord 6-32 and thus focusing the diatonic orientation from *(D♭/A♭/E♭)* to *(D♭/A♭)*.

However, the presence of the seventh member of the field - g or g♭ - is withheld until bar 11. Here, g♭ is introduced in the bass, but c is absent for the first time in

the song and is displaced in bar 12 by c♭ (respelled enharmonically as b♮ in the piano). This is quickly followed by the introduction of e♮, a♮ and d♮ in bars 12-13. (The voice part continues to employ flat notation.)

The appearance of d♮ (emphasized by its extreme bass register) represents the furthest pole from the opening A♭ and thus corresponds with the poetic "mutation" from rose to plum. The disorientation expressed in the poem at this point ("The dear only knows...") is reflected by the reappearance of the opening material transposed a semitone higher. (Semitonal relationships such as this play a vital role in the organisation of much of Carter's music of this period.) The stability of bars 14-17, which express the field *(D/A/E)*, is short-lived, however, as g♮ and c♮ displace g# and c# in bars 18-19. This would appear to suggest that the flatward drift is continuing. However, c# and g# are reinstated in bars 20-21 and the next few bars provoke a "crisis" in terms of diatonic orientation; in place of the gradual movement through the cycle of fifths, a more abrupt motion appears, resulting in the close juxtaposition of "false relations", for example d♮-d# in bar 22. In bars 24-5, there is a rapid sharpward motion, bringing a#, e# and b# (=c) in quick succession and leading to the song's second climax in bar 25 on a chord which expresses the diatonic field *(E. /B.)*.

From this point to bar 32, there is a gradual, almost imperceptible, return to the diatonic orientation of the song's opening. The d♮ of 25-6 disappears in 27-30 and is displaced by d♭ in 30-31. During the final part of the song ("But were always a rose") neither d nor d♭ are present, nor are g or g♭, and thus the *(D♭/A♭/E♭)* field of the opening is restored.

(b) Piano Sonata, Second Movement, bb.1-26.

This passage (see Ex.4.2) reveals several striking similarities with the song described above; the harmonic texture is almost exclusively diatonic, although "pure" triads are avoided; there is a large-scale motion between contextually determined tone-centres a semitone apart; this motion is effected through a gradual "drift" through the cycle of fifths.

The internal formal organization of the passage may be understood in relatively conventional terms as "exposition" (1-15), "development" (16-20) and "climax and restatement" (21-26), the latter taking the form of an explicit recall of the opening texture and rhythm (c.f. bb.1-2, 25-26). The climax may be regarded as a more oblique reference to preceding material, retaining the melodic contour, but altering the actual intervals (see Ex.4.3).[3]

A Salzerian interpretation of this passage would divide it into two phases; a "prolongation" of (d,b) as a referential, or tonic, sonority extending from b.1 to b.15, with the bass moving from d in its "obligatory register" to the b of an "inner voice" in b.15; the second phase (b.16-26) would be regarded as a passage of "prolonged motion", in which the structural d gives way to an e♭ neighbour note, the structural significance of both pitch classes being indicated by their presence in no fewer than five octave positions. (This analysis would continue by demonstrating the prolongation of e♭ through bars 25-51 and its "resolution" with the return of d in bars

[3] This technique of interval expansion or contraction is a common device in Carter's transitional music (it occurs in the Cello Sonata, Quartet Sonata and First Quartet) and demonstrates an interest in finding ways of relating thematic material other than through more obvious motivic/intervallic procedures. It will be more thoroughly explored in Chapter 7, pp. 180-184.

51-52; see pp.84-5 of this chapter.) The question of whether we may speak of "prolongation" in this music must wait until a discussion of harmony and voice-leading is undertaken. However, the relationship of tone-centres a semitone apart is of undeniable importance in the work (the first movement plays on the relationships of b with a#/b♭ and b with c) and an "association" of d and e♭ may be accepted with few qualms.

The harmonic material of most of the passage bears an oblique relation to tonality; as in *The Rose Family*, its almost pure diatonicism is set against an avoidance of triads and of functional tonal progressions, particularly those involving motion by semitones. The resulting harmonic texture thus seems more "modal" than tonal and this modality is reflected in the way in which the note d is used as a tone-centre. A further reference to Dahlhaus's notion of "open" and "closed" systems should elucidate the function of the pitch d in bars 1-15. These bars inhabit a harmonic structure which is "almost closed". Tension is generated between the overlapping diatonic fields of *C* and *F* and between the static, "anti-progressive" characteristics of modality and the dynamic, processive nature of tonality. The harmonic structure is "almost closed" in that it admits one ambiguity, the alternation of b and b♭. The reiteration of d as a melodic starting and end point has some of the characteristics of a "secondary structure" or "an additional determining factor", giving the music a "dorian modal" quality, but it takes on greater significance through its opposition to g. Example 4.4(a) illustrates the relationship between the modes on d and g, which hinges on the exchange of the semitone b-c for a-b♭. Example 4.4(b) is an abstract representation of the pitch-relationships within the upper voice melody of bars 1-15. A symmetrical structure is set up, with d and g as focal points or poles, each decorated by upper and

lower neighbours. To fill the space between g and d, however, the symmetry must be broken, and one of two diatonic alternatives chosen. The music thus contains a destabilizing equivocal element which counteracts the otherwise static and self-contained modal structure.

From bar 15 to the end of the passage a stronger sense of "directed motion" emerges. The jostling for position of b♭ and b generates a process of "modal modulation", which is not so much the establishment of a succession of keys, as the gradual displacement of elements of the current mode by those of the mode transposed by a perfect fifth, producing a sharpward "drift". (F is displaced by f# and c by c# in b.16, g by g# and d by d# in b.18 etc.) An enharmonic change takes place in bars 20-21 so that c## becomes d and e# becomes f.

From this point, the harmony not only begins a reverse flatward drift, but becomes increasingly dissonant. In terms of diatonic orientation, bars 21-6 take us to the composite field *e♭/a♭*, in which the predominantly flat notation is contradicted by the "raised leading notes" g♮ and d♮. The climax and resolution of the passage are brought about through the introduction and subsequent elimination of harmony which is not explicable in purely diatonic terms. This represents an intensification of the process in *The Rose Family*, where no single sonority is actually non-diatonic in itself. In the harmonic vocabulary of the passage from the Piano Sonata, the most obvious distinction lies between those vertical sonorities which are subsets of the diatonic scale (7-35) and those which are not. The former make up the greater part of the passage by far. The latter, only three different sonorities, are confined to the final section of the passage (bb.23-4). The relatively greater dissonance of these three sonorities may be explained by the fact that they contain semitone relationships which cannot be

interpreted diatonically. The succession of vertical sonorities in bars 21-6 - single note, [0,3] dyad ("minor third"), 3-11 ("minor triad"), 4-26 ("minor seventh"), 3-10 ("diminished triad"), 4-3 [0,1,3,4], 4-18 [0,1,4,7], 4-5 [0,1,2,6], 3-5 [0,1,5] (no diatonic "equivalents"), octave - clearly represents a pattern of intensification and relaxation suggestive of traditional harmonic process. (A more thorough investigation of Carter's use of particular "chords" or "sets" will be undertaken in Chapter 5.)

The musical language of this passage thus represents an advance in terms of complexity over that of the earlier song. The principal reasons for this are (i) the immediate introduction of an element of ambiguity (the "false relation" b-b♭) and (ii) the appearance, at the climax of the passage, of non-diatonic sonorities (which can nevertheless be explained as the result of stepwise voice-leading).

(c) Piano Sonata, Second Movement, bb.27-52

The passage immediately succeeding the one described above offers contrasting thematic material and texture, but is nevertheless bound to it by the overall motion back from e♭ to d (see Ex.4.5). The harmonic process involved in conjunction with this motion is similar to that employed in the opening paragraph of the movement, but the assault on pure diatonicism is carried to further extremes. This, combined with a progressive breakdown of rhythmic, melodic and textural stability, produces a passage whose violent disruption of the norms established at the beginning of the movement is almost expressionistic in effect.

The passage begins stably in the diatonic field *G♭* which persists from bar 26 to 29. During the next two bars, there is a gentle sharpward "drift" of the kind

familiar from the passages described above; the introduction of c♮ in bar 30 and of d♮ and g♮ in bar 31 take us through the cycle of fifths to the field (*E♭ /B♭*). In bars 32-33, *G♭* is reestablished through the reintroduction of g♭, d♭ and c♭. This process of departure and return reinforces the local stability of *G♭*.

This diatonic field is then sustained for another eight bars, during which time, the music takes on a greater feeling of conventional regularity than has previously been experienced in the movement; a new rhythmic ostinato figure emerges in the outer voices of a three-part polyphonic texture, the middle part developing a song-like melodic line. The only harmonic "foreign body" which occurs during bars 33-40 is the e♭♭ in the bass of bar 37. The context in which this pitch occurs allows us to interpret it contrapuntally, that is as a passing note in the "bass voice" between the pitches e♭ (in b.36) and d♭ (in b.38). The latter are both members of the prevailing diatonic field and therefore apparently more "stable" than the intervening pitch, which thus appears dependent upon them. The association of these three pitches through similarity of registral position and metrical placement naturally creates the impression of a descending linear progression.

The precedent set by the appearance of such contrapuntal phenomena is used to undermine the diatonic stability of the harmony of the passage from bar 41 onward. Here, we have a sense of "bifurcation" of harmonic orientation, with one part of the texture remaining within the prevailing diatonic field and the other drawing us away. This effect is brought about by the appearance of the pitch b♭♭ in the left hand in bar 41 which is placed in direct opposition to the b♭s which appear higher in the texture. Thus while the upper part of the texture remains within *G♭* during bars 41-5, the lowest voice persists with the downward linear motion begun in bars 36-40, apparently

taking us into the field *C♭*. However, although the b♭♭ of bar 41 at first appears to be a passing note, identical in function to the e♭♭ of bar 37, its subsequent enharmonic respelling as a♮ in bars 42-4 suggests a more radical challenge to the prevailing diatonic field. This challenge materialises in bar 45, where the descending linear motion in the bass arrives on g♮, thus suggesting a diatonic field of (*B♭ / F*) in the left hand. Meanwhile, the right hand part moves towards *C♭* with the introduction of the pitch f♭ in bar 45. Thus at this point, there is a radical separation between the harmonic fields of the two parts of the texture, with only one pitch-class (b♭) in common. (The position of the b♭ in the texture at this point - in octaves in the "middle register" - combined with its metrical stress - it appears on the downbeats of bars 43-47 - emphasizes its role as a central pivot.)

The matter of diatonic orientation is considerably complicated in the succeeding bars (46-51). The reinterpretation of f♭ as e♮ and the exchange of d♭ and g♮ between the hands in bar 46 suggests the field *f*, but the f# in the extreme bass which continues the linear descent in that register (b♭ - a - g - f#) obviously conflicts with this. Pivotal shifting between distantly related fields accelerates during the next four bars so that by bars 48-9 only three to four consecutive notes remain within a single field and by the end of bar 49 sometimes only two consecutive notes do so. Clearly, this represents the point beyond which the concept of harmonic orientation according to diatonic fields ceases to be appropriate. (See Chap.6, pp.157-9 and Ex.6.13 for an alternative analysis of this passage and the preceding one in terms of voice-leading.)

2. Chromatic complementation

The "atonality" of Carter's later music is a result not only of the use of pc sets and intervals divorced from their tonal functions, but also of the constant circulation of all twelve pcs of the chromatic scale. Repetition, rhythmic stress, extremes of register and other factors may give prominence to particular pitches, but these nevertheless appear against a background of the total chromatic field, rather than as the nodes of a network of tonal relationships.

The gradual accumulation of the 12-note aggregate as a means of organizing pitch in an atonal work has been observed in pre-serial works of Schoenberg and Webern. Similarly, in Carter's works, before the development of a method of ordering the twelve notes into all-interval "tonics", the principle of chromatic complementation is occasionally used systematically.

Example 4.6 from the first movement of the Piano Sonata (bb.83-5), illustrates this principle at work. The analysis shows that, despite the obvious centring on c, the full chromatic complement is used. The upper line shows the gradual process of aggregation in the main melodic line. This does not achieve chromatic "completion" until the penultimate note of the "answering phrase", g; thus, perhaps, the melodic closure is reinforced by the notion of chromatic completion. The lower line represents a similar process, taking in the total pitch-content of melody and subsidiary "harmonic support". This achieves chromatic completion with the a concluding the first melodic phrase; thus the bi-partite phrase-structure is underlined by the handling of the total chromatic field. (See Ex.6.9(a) for an alternative analytical approach to this passage, examining set structure and symmetry.)

This technique of withholding one pitch-class for rhetorical effect or structural purpose is given further illustration in Example 4.7, which shows the opening six bars of the Cello Sonata. Here, chromatic aggregation is not complete until the cello's first note, thus highlighting its entry. Further, more sophisticated, examples of this technique can be found in the first movement of the Quartet Sonata (see Exx.5.16 and 10.8).

CHAPTER 5: CHORDS AND/OR SETS

The previous chapter has dealt with one aspect of the large-scale harmonic organization of Carter's music. The present chapter will examine the harmonic fabric in greater detail and will attempt to trace the changes in the types of and relations between harmonic building-blocks used by Carter during the period 1945-55. It will be useful to refer to the composer's own pronouncements on the subject of harmony and to compare these with attempts by other writers to interpret his ideas and apply them to analysis of the music. Much of this chapter will therefore consist of an exploration of the relationship between pitch-class set theory and Carter's compositional methods.

The title of this chapter is intended to express something of the semantic difficulty involved in reconciling the terminology of the composer with that of his analysts. The relatively conservative mode of expression Carter adopts when dealing with technical aspects of his music contrasts with the complex vocabulary developed by theorists in order to describe music of such extreme sophistication adequately. The situation is succinctly encapsulated in the following exchange [Bernard 1990(a)]:

JB Even though "chord" is usually specific in its meaning...
EC ...of simultaneity...
JB ...whereas you clearly mean by the word "chord"...
EC Yeah, I know, I know...
JB ...the linear presentation of notes as well.
EC I'm aware of that. "Set" is a word for tennis, while arpeggiation is a more familiar term in my vocabulary

The problem is that the word "chord" is no longer entirely apt as a description of the basic harmonic building-block of much twentieth-century music. Schoenberg's dictum that "the two-or-more-dimensional space in which musical ideas are presented

is a unit" ["Composition with Twelve Tones (1)" (1941), in Schoenberg 1975: 220], forms an unspoken background to the conversation quoted above. Harmony and melody are, according to this viewpoint, to be regarded as indivisible; a "motive" may be projected either vertically or horizontally and thus the distinction between "motive" and "chord" is dissolved. This basic premise is one of the fundamentals of pitch-class set theory.

In Carter's case, however, his attachment to the word "chord" is not merely the result of an "old-fashioned" approach to terminology; it does in fact strongly reflect his compositional practice, which assigns primacy to the vertical dimension. Combinations of pitches are categorized and tried out in various successions and spacings *as chords* in the so-called "Harmony Book", which Carter began compiling in the 1960s.

The particular registration and spacing of these chords is as important a part of their identity as their intervallic content[1]. Most recent analysts of Carter's later music have been sensitive to this fact and have attempted to adapt set theory by incorporating some means of considering specific pitch rather than pitch-class alone, which may appear too abstract a concept to be genuinely useful. Thus, for example, Jonathan Bernard:

> In the case of Carter's music [...] it seems quite possible that individual modes of presentation are inseparable from pitch-class set equivalence. In other words, it becomes necessary to define analysis primarily in spatial terms, in which the identity of a pitch collection is a function of its actual intervallic

[1] "Spacing in chords is a very important matter in my work, since I distinguish between an interval and its inversion and often use them for very different musical effects. Even in chords of three notes, spacings become as differentiating as mirror inversions - maybe more. After all, a four-note chord has 24 different spacings of intervals if none of the intervals exceeds an octave - 48 if you count those of its mirror inversion separately, of course." [Carter, quoted in Bernard 1990(a): 201]

> configuration. There is plenty of evidence, both in his writings and in his sketches, that Carter composes with spatial criteria in mind. [...] It is clear that the *literal* size of the interval is crucial, since inversional equivalence is also explicitly excluded. [Bernard 1983: 7]

Harvey, too, argues for a "more generous definition of interval class [...] as an absolute measure of "distance" in musical "space", defined in size but not necessarily in terms of precise pitch identity" [Harvey 1989: 209-10].

Taking due note of these observations, it is nevertheless undeniable that Carter's classification of three- to six-note chords is remarkably similar to Forte's list of prime forms of pc sets in *The Structure of Atonal Music* [Forte 1973: 179-181][2]. As David Schiff states, Carter and Forte "agree on basic definitions and on the number of chords" [Schiff 1983: 324]. Furthermore, Carter's interest in the relationships between chords demonstrates a familiarity with the concepts of inclusion and complementation:

> This has become for me a whole new field of thought, involving such questions as what two-note groups are contained in three-note groups and so forth. This way of working allows me to make all sorts of harmonic identities by adding and subtracting notes and so produce a whole gamut of harmonic colours all related to each other. [Edwards: 108]

In short, in Carter's later works, the selection of abstractly defined pitch-class sets is an indispensable step in the compositional process, after which the physical characteristics of spacing and instrumentation and association with rhythmic elements may be assigned. However, the question of whether matters of pitch are actually determined before those of rhythm and texture is difficult to establish; the evidence of Carter's writings often suggests the contrary to be the case:

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[2] Since the works to be examined in this study all pre-date the compilation of Carter's Harmony Book and since Forte's numbering system is more generally known, the latter will be adopted throughout this study. See Appendix 1 for a cross-referencing of Carter's numbering of chords with Forte's list of prime forms.

> [...]the first stage of conception was the general dramatic plan [...] The next stage was that of working out this over-all plan concretely: and determining the specific rhythmic detail-patterns of the basic material, and how they could be variously combined and interrelated, and how they could acquire pitch. [Edwards: 104-5]

The writings of Schiff, Bernard and the composer himself [Schiff 1983: 61-9, Bernard 1983: 5-11], promote the view that Carter's harmonic practice has progressed gradually towards a "deliberately global method" [Bernard 1983: 6]; one in which maximum harmonic variety is achieved, but not at the expense of coherence, since all the harmonic material employed is related to a governing chord or chords. The range of possible subsets and other relatives of the governing chords is divided into "families", whose members are related through similarities of interval content. Norms of spacing and registration are established as reference points, around which patterns of departure and return may evolve; these harmonic norms are perceptually reinforced through their association with distinctive features from other parameters, such as rhythm and instrumentation. The size of the governing chords, and of the members of the intervallic or chordal vocabularies formed from them, grew during the middle part of Carter's career; the first two String Quartets (1951 and 1959) and the Double Concerto (1961) use the all-interval tetrachords - the latter two works assigning intervallic vocabularies to different instruments or groups - , the Piano Concerto (1965) uses two twelve-note governing chords and divides the twelve possible three-note chords between soloist and orchestra, while the Concerto for Orchestra (1969) deals in repertoires of three-, four-, five- and seven-note chords. In more recent large-scale works, twelve-note all-interval chords have been Carter's favoured harmonic resource, but the principles evolved in the 1960s have continued to form the basis of his harmonic practice.

The period under consideration here is that leading up to Carter's discovery of the potential of the all-interval tetrachords in the early 1950s. During this period, we may observe the composer exploring the possibilities of creating distinctive chordal vocabularies through the varied combination of intervals. This process of exploration extends throughout the period, encompassing the largely diatonic language of the Piano Sonata and the highly chromatic language of the Quartet Sonata alike. Certain kinds of chord or set, it will become apparent, proved more useful to Carter than others and were used extensively in more than one work.

1. A note on pitch-class set genera

As previously suggested [above, p.76], talk of "families" of chords suggests a possible link between Carter's harmonic practice and Allen Forte's concept of pc set "genera" [Forte 1988]. These "genera" are in fact families of sets derived from common "progenitors"; they are formed from groups of sets of cardinality 4 to 9 which have a particular trichord or pair of trichords as common subsets. The twelve harmonic genera which result from this division are not equal in size or mutually exclusive in terms of membership, nor is any twentieth-century work or section of a work likely to contain only members of one genus. Rather, through a process of segmentation of the musical surface and a statistical analysis of the generic affiliations of the resulting sets, a genus or small group of genera may be identified as predominant. What the theory intends to show is that the distinctive harmonic languages of particular works, composers or groups of composers can be categorized systematically in terms of their relation to the complete range of possibilities inherent

in the twelve-note universe. The changes in harmonic language during the late nineteenth and early twentieth centuries can thus be ascribed to a gradual working through the twelve genera from the familiar "diatonic" and "tonal" genera (these are Forte's informal descriptive titles), via various forms of chromaticism represented in the "diminished", "whole-tone" and "augmented" genera, among others, to the "atonal". Certain pc sets, being members of more than one harmonic genus, are capable of reinterpretation in different contexts and may thus be seen as agents of transition. For example, 4-27, the "dominant/half-diminished seventh",

> which is a hallmark of late 19th-century experimental music, connects Genus 2, the whole-tone genus, with Genus 3 the "diminished" genus, and, at the far end of the spectrum, joins the traditional "dia-tonal" genus, Genus 12. In fact, from a historical vantage,[...this corresponds] to the transplantation of the familiar half-diminished seventh (in particular) from its native diatonic clime to the exotic habitat of the diminished and whole-tone genera. [Forte 1988: 204]

Carter's harmonic practice, which seeks deliberately to divide the total chromatic universe into separate but related spheres, would seem to provide suitable musical material upon which to test the theory of genera, and indeed, Forte includes a study of the first movement of the Concerto for Orchestra [: 249-252] in an historical survey extending from Chopin to Stockhausen. Forte's finding that "the main generic components of the harmonic species of the movement are Genus 4 and Genus 8" [: 249] agrees closely with the composer's published hand-written sketch of the work's basic constituents [Carter 1973: 54-55]. Genus 4 consists of sets containing trichord 3-12, while Genus 8 consists of sets containing both 3-3 and 3-4. These three trichords are precisely those listed by Carter as "characteristic" for the movement. Furthermore, Forte's table of prominent sets and their principal generic affiliations lists only those trichords, tetrachords and pentachords which appear on Carter's chart

for the movement. This suggests that Forte has sought only to analyze the characteristics of the pre-compositional materials rather than those of the movement itself. As Forte himself states, the fact that "we have the composer's own catalogue of harmonic materials [...] by no means confirms that the issue of detailed segmentation is totally solved" [:249]. Since lack of space prevents Forte from providing any musical examples in support of his "table of results", this issue is not addressed, let alone resolved.

The observations made with regard to the movement's harmonic materials are intended to demonstrate that the generic structure is "more 'unified' than might appear at first" [: 249], since of the five genera represented, three are bound into a "Supragenus" while another has a "uniform relation" to each of these three. This uniformity is emphasized by Forte's practice of reducing the multiplicity of relations between sets and genera to a statistically significant few. According to Forte, the material of this movement demonstrates "a very rich harmonic panorama" which has to be "brought into focus" through the operation of various rules of genus formation in order to be interpreted effectively [: 250]. Forte makes no comment on whether "uniformity" or "richness" is the more important or characteristic quality in this music, but it may be presumed that a balance between the two is desirable and is a prerequisite for satisfying musical creation.

It is not my intention to portray the development of Carter's harmonic language as a steady progress through the pc set genera, as this might suggest an inappropriately teleological view. Furthermore, the trichordal basis of Forte's system of genera does not always fit comfortably with Carter's earlier harmonic practice, which often takes

the combination of dyads as its starting point[3]. This observation does not invalidate the applicability of Forte's theory, but it suggests an important change of emphasis; the network of relationships created through dyadic combinations is quite different from that created through trichordal combinations.

Not all the interrelationships among sets described in pc set theory, including the system of genera, can be shown to be significant in the compositions under analysis here. However, recourse will occasionally be made to this theoretical apparatus in order to clarify certain relationships which are exploited in Carter's compositions.

2. "Key-chords"

In response to enquiries about the basis of his harmonic language, Carter has often cited his use of particular chords or sets as governing sonorities. The latter, according to the composer, play a central role in two ways;

(i) they may be established as norms through repetition and other means of contextual emphasis. Thus, a loosely hierarchic system may be created, in which the "key-chord" becomes a quasi-tonic, upon which other harmonies are dependent;

(ii) they may act as a source of harmonic materials. Their constituent intervals and subsets may be extracted and recombined to form a distinctive harmonic repertoire or vocabulary.

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[3] "[...] in all my pieces written before the Piano Concerto the pitch-behaviour of the sub-voices constituting the separate contributing characters was almost entirely linear or built up of two-note intervals [...]" [Edwards: 107]

The second of these two functions seems to have been the one which came to play the defining role in the constitution of such "key-chords". Often, in earlier works, the distinctive sonority of a chord may have recommended itself to the composer as a suitable harmonic focus or reference point; in the transitional music, however, the richness and cohesiveness of the intervallic relationships to be drawn from the "key-chord" are paramount. The discovery of the potential of the "all-interval" tetrachords 4-Z15 [0,1,4,6] and 4-Z29 [0,1,3,7] was clearly a crucial step in the development of this method of harmonic organization, as is revealed in the following passages:

> In all my works from the Cello Sonata up through the Double Concerto I used specific chords mainly as unifying factors in the musical rhetoric - that is, as frequently recurring central sounds from which the different pitch material of the pieces was derived. For example, my First String Quartet is based on an "all-interval" four-note chord, which is used constantly, both vertically and occasionally as a motive to join all the intervals of the work into a characteristic sound whose presence is felt "through" all the very different kinds of linear intervallic writing. This chord functions as a harmonic "frame" for the work [...] which makes all the events and details of a piece of music feel as if they belong together and constitute a convincing and unified musical continuity. [Edwards: 106-7]

> *Q: Does your music have any harmonic plan?*
> A: A chord, a vertical group of pitches either simultaneously sounded or arpeggiated, like a motif, is a combination to be more or less clearly remembered and related to previous and future chords heard in the same work. Whether a composer is conscious of it or not, a field of operation with its principles of motion and of interaction is stated or suggested at the beginning of any work [...] In my *First String Quartet*, I did use a "key" four-note chord, one of the two four-note groups, that joins all the two-note intervals into pairs, thus allowing for the total range of interval qualities that can still be referred back to a basic chord-sound. This chord is not used at every moment in the work but occurs frequently enough, especially in important places, to function, I hope, as a formative factor. It is presented in various kinds of part-writing and interval combination, the number of notes is increased and diminished in it [...] ["Shop Talk by an American Composer", *MQ* 46/ii (1960), also *CEL*: 218-9]

Although Carter himself cites the Cello Sonata as the first to employ such "key-chords" or "source-sets", David Schiff states that the idea began to evolve several

years earlier, but was applied with "increasing rigour" in the Piano Sonata and Cello Sonata [Schiff 1983: 64].

An important note of warning should be sounded here. The "key-chord" concept outlined by Carter in response to these questions, and developed by Schiff, by no means provides the basis for a complete explanation of the composer's harmonic practice, but is rather in the nature of a convenient "pat" answer, convincingly technical but sufficiently simple to be understood by the student or dilettante analyst. Those analysts who have undertaken a more detailed examination of Carter's work than is offered in Schiff's book, have inevitably found the "key-chord" explanation to be too simplistic or only a partial truth.

Several examples may be cited in support of this statement. Jonathan Bernard, in a discussion of the first movement of the Cello Sonata, finds that Schiff's description of its harmonic materials is inadequate:

> [...] the first part of the opening Cello phrase can be interpreted as overlapping instances of pc sets 5-11 [0,2,3,4,7], 4-14 [0,2,3,7] and 4-17 [0,3,4,7], with 4-14 and 4-17 each expressed once as literal subsets of 5-11. [Bernard 1988: 172] [...] My analysis differs significantly from Schiff's. Both 4-14 and 4-17 are included in his tabulation of four-note subsets of a controlling six-note set (6-Z43 [0,1,2,5,6,8]), but 5-11 apparently does not figure in his scheme, since it is not a subset of 6-Z43. [: 200, footnote 18]

A doctoral dissertation by C.R.Kies [Kies 1984], which concludes with a study of the first movement of the Cello Sonata, also disagrees with Schiff's interpretation, in that it identifies 6-20 [0,1,4,5,8,9] as the governing sonority, rather than 6-Z43. David Harvey's interpretation of the same work's harmonic materials, although heavily dependent upon Schiff's, views the opening tetrachord, 4-7, as the governing sonority. In fact, it will be seen that the techniques connected with "key-chords" underwent considerable changes during the course of the Cello Sonata, so that this work may

indeed be regarded as the linchpin of the "transitional period".

The examples given above may appear to be mere quibbles that do not challenge the fundamental idea of a "key-chord"; taken in conjunction, however, they demonstrate the difficulties that often arise in attempting to reconcile the composer's statements with a detailed examination of his actual practice. A more fundamental criticism of Carter's "key-chord" explanation appears in Carlton Gamer's review of *Flawed Words and Stubborn Sounds* [Gamer 1973]. One symptom of the "lack of specificity and analytical inadequacy" [: 154] which he finds disappointing in the book, is that "the harmonic unity which admittedly exists in Carter's music can often be more adequately explained in other terms than his own"[: 154]. In particular, he questions whether the composer's alleged use of the all-interval tetrachord 4-Z15 as a "harmonic frame" in the First Quartet is really an accurate reflection of his harmonic technique. Gamer's approach to an understanding of Carter's technique in this work depends upon an appreciation of the richness and diversity of the intervallic content of the sets used in the opening cello solo, rather than upon the unifying power of the all-interval tetrachord. Segmenting the work's opening ten bars into nine four or five-note sets, he notes that "the six unique pitch structures of size 2 (that is, the six interval classes), the twelve unique pitch structures of size 3, and the twenty-nine of size 4 are each contained either within one or another of the given sets or within the unions of adjacent sets of which certain phrases of the solo are comprised", and draws from this the conclusion that "every vertical sonority played by any one of the four instruments anywhere in the entire quartet can be heard as an instance of one of the pitch structures contained within the sets of the first 10 measures"[: 154]. This observation is interesting in that it shows Carter developing a musical language which

embraces the maximum variety of intervallic combinations, but it does not explain how he draws coherence from that variety. Gamer's argument, if taken to its logical conclusion, would imply that the opening of the First Quartet could be related to any other piece of music, since it contains every possible 2, 3 or 4-note set. Clearly, some sets must be privileged above others if coherence is to be achieved, the all-interval tetrachords being chief among these privileged sets because of their power to integrate various possibilities of intervallic combination into a single sonority. Such "key-chords" should therefore not be regarded as all-powerful generators, but as occasional points of focus.

The following sections will survey the changing character of the basic harmonic building blocks used by Carter and their relationship with the idea of a "key-chord" over the transitional period.

3. Diatonic Sets

As previously described, the harmonic language of Carter's earlier music is characterized by diatonicism, but tends to eschew simple triadic harmonies. The hierarchic relationship between consonance and dissonance, which governs harmonic relationships in tonal music, has, therefore, a severely attenuated role in Carter's music. There are chords and pitches whose function is analogous to that of the tonic and the tonic chord in tonal music, and there are similar "quasi-dominant" chords and pitches, but the effect of both these types of harmony is often dependent to a large degree upon their intervallic resemblance to tonal triads. Beyond recognizing these quasi-tonics and dominants, it is extremely difficult to find a consistent relationship

between the kinds of harmony employed by Carter and the network of triads and scale-steps of tonal music.

However, this is not to suggest that Carter's earlier music admits no hierarchic distinction between harmonies akin to that between consonance and dissonance. Two basic observations may be made with regard to Carter's harmonic practice. The first is that harmonic density plays a similar role in Carter's music to that which it plays in tonal music; three and four note chords tend to be the norm, with five and six note chords reserved for moments of harmonic tension or complexity. This distinction, although informal and flexible, operates throughout the earlier part of Carter's career. The second observation is that the intervals of semitone and tritone (interval classes 1 and 6) are treated as more dissonant and less stable than the others, while interval classes 3, 4 and 5 - those which make up the traditional triad - are treated as the most stable. Interval class 2 occupies an intermediate position, frequently being accepted as part of a stable harmonic entity.

These two observations may be partially explained and subsumed by consideration of another, more penetrating distinction; that which may be drawn between diatonic and non-diatonic harmonies. In Carter's earlier music it is the former which act as the harmonic norms, while the latter play a role analogous to that of dissonances in tonal music. "Diatonic chords", in this context, may simply be taken to mean those which are formed from subsets of 7-35 [0,1,3,5,6,8,10], the set representing the major scale or complete diatonic field. The total number of sets of cardinality 3 to 6 which fall into this category is 35, clearly far exceeding the number of chord-types normally used in tonal music.

Among these 35, further subdivisions may be made, enabling us to draw

distinctions between varying degrees of consonance and dissonance. It will be recalled from the previous chapter that 7-35 may be created from a continuous segment of the cycle of fifths, as may its subsets 6-32 [0,2,4,5,7,9] and 5-35 [0,2,4,7,9]. These two sets may be used to create further "filters", separating sets with strong diatonic implications (i.e. a high incidence of interval class 5 in their interval vectors) from those with relatively weaker diatonic allegiance. The subsets of 6-32 form an inner core of 16 and those which are also subsets of 5-35, a smaller nucleus of 7. Appendix 2 lays out these relationships in tabular form. Three sub-categories of diatonic set are thus created: "Type A", which are subsets of 5-35; "Type B", subsets of 6-32, but not of 5-35; and "Type C", subsets of 7-35, but not of 6-32. An examination of the intervallic content of the sets in each of these sub-categories shows further internal consistencies. Type A sets contain only interval classes 2, 3, 4 and 5, thus, semitonal or tritone relationships are not possible among this type. Type B sets add interval class 1 to the intervallic repertoire, while type C sets also include a single tritone relationship. It will also be noted that for type C sets of cardinality 4 and greater, two semitonal relationships may exist, thus creating the possibility of a greater degree of dissonance than is available among the type A and B diatonic sets (see sets 4-8, 5-Z12, 5-20, 6-Z25 and 6-Z26).

An examination of some of Carter's earlier works will show that diatonic sets of types A and B are treated as normal and stable (with precedence given to the former, especially sets 3-7, 3-9, 4-23 and 4-26), while type C sets are often used to create a degree of harmonic ambiguity and to act as a bridge to non-diatonic harmonies.

(a) *The Rose Family*

Returning to the song *The Rose Family*, one may observe that every individual vertical sonority can be found in the table of diatonic sets shown in Appendix 2 (see Ex.5.1). Indeed, the harmonic make-up of the song is almost exclusively drawn from types A and B, suggesting that the harmonic language of this work is diatonic to an unusually strong degree. (There are only two instances of type C sets, both occurring only once and lasting for a single quaver; 4-Z29 b.12, 5th quaver; 4-8 b.21, 4th quaver.) Carter exercises a control over the types of chord used in this song which matches the careful management of diatonic fields. During the first seven bars of the song, since all the pitches used fall within the field *(D♭ / A♭ /E♭)* (or set class 5-35, with pitch membership [a♭ ,b♭ ,c,d♭ ,e♭]), all the harmonies used are of type A. In fact, for the first four bars, the only harmony denser than a dyad is set 3-9 [0,2,7]. The latter, which maximizes interval class 5 and only contains one other interval class, is strongly representative of the cycle of fifths and may therefore be regarded as the "seed" of the harmonic language and process of the song, since these depend upon motion through this cycle. The relatively low harmonic density and reliance on type A diatonic sets is clearly a musical analogue of the "naive" mood of the poem's first two lines. The opening figure in the bass, two rising fifths (a♭-e♭-b♭), is an instance of set 3-9 but also has an allusion to tonal function, as it suggests overlapping arpeggiations of the tonic and dominant triads of A flat major.

As the song unfolds, Carter employs harmonies of progressively greater density and complexity. The first vertical tetrachord to be heard (4-22) occurs in bar 5, third quaver. The next such harmony, occurring on the third quaver of bar 8, is 4-14 [b♭,

c,d♭,f]. This is the first type B set to be heard in the song, and its occurrence during the phrase "But the theory now goes" mirrors the text's move away from the naivety of the opening. From this point until the second quaver of bar 11, the total pitch field is represented by 6-32 *(D♭/A♭)* and, therefore, a mixture of type A and B sets may be used. However, Carter still maintains the relative purity of type A, only employing one type B set, trichord 3-4, on the fifth quaver of bar 9. Nevertheless, a greater variety of trichords are employed. This passage also sees a far greater occurrence of tetrachordal harmony, as set 4-22 is heard three times during bars 9-10.

Bars 11-13 lead to the song's first climax through a rapid flatward motion through diatonic fields. The climax itself, on the word "plum", is the fourth of a succession of tetrachords (4-Z29, 4-22, 4-26, 4-14), the first such sequence in the song. This progression is formed from the arpeggiation of an A major triad in the piano right hand, with the uppermost part (e-a-c#) moving in symmetrical contrary motion with the bass line in the left hand (d# - b-f#-d♮). The final chord, 4-14, is constructed so as to suggest a superimposition of tonic and dominant triads of D major, thus linking this climactic moment with the song's opening.

Similar processes of thickening of the texture and movement from type A to type B sets are present in the second part of the song. Here, five-note chords are employed as the climactic sonorities and the relationship between the three type A/B pentachords 5-35, 5-23 and 5-27 is highlighted. Type A harmonies alone are employed from the second quaver of bar 14 to the third quaver of bar 19, with one appearance of 4-22, in bar 17, being the sole harmony denser than a trichord. From bar 19 onwards, as the diatonic orientation becomes more complex, so does the nature of individual harmonies. Type B sets 3-4, 4-11 and 4-14 are introduced in bars 19-

20, while in bars 21-22 an almost unbroken series of tetrachords leads to the first pentachord of the song, 5-27, on the first beat of bar 23. The succeeding bars in turn lead to the climax of the whole song - a vertical statement of 5-23, supporting the words "You, of course" (bb.25-6). From this point, the three pentachords mentioned above form the entire harmonic material; after the chordal statement of 5-23, the piano part presents 5-35 (bb.27-30) and 5-27 (bb.30-31) in a similar fashion. The remainder of the song is built entirely from the pitch field represented by 5-35 as it appeared at the opening.

The presentation of these three chordally stated pentachords is worth examining in greater detail for the information it gives about Carter's style and technique. Each of the chords is spaced in such a way as to emphasize its quasi-tonal characteristics; they are constructed as "stacks" of perfect fifths and/or thirds, so that the lowest note may be interpreted as the root of a triadic formation. However, their succession relies less upon the concept of harmonic "progression", found in tonal music, than upon properties of permutation and invariance. Between them, the three pentachords exhaust the range of possible different 5-note subsets of 6-32. The similarity relationships between the three sets are displayed in the table below:

Table 5.1 Similarity relations between pentachords appearing in *The Rose Family*

	5-23 [132130]	
5-27 [122230]	R_2R_p	5-27 [122230]
5-35 [032140]	R_2R_p	R_p

The table shows that the R_p relationship[4] holds between all three sets. In the passage in question, this relationship is strongly represented in that common four-note subsets are held at the same pitch-class level between each pair of pentachords; as 5-23 gives way to 5-35 in bars 26-27, set 4-23 (b♭ ,c,e♭ ,f) is present in both chords with d♮ in the first exchanged for a♭ in the second; in bar 30, the change from 5-35 to 5-27 is executed by exchanging b♭ for d♭ while set 4-26 (e♭ ,f,a♭ ,c) remains invariant. The exchange of pitch-classes which takes place during this sequence of chords effects a gradual change in diatonic orientation from *(A♭/E♭/B♭)* in the first chord, to *(D♭/ A♭ / E♭)* in the second, and *(G♭/D♭/A♭)* in the third. The pitch classes which link each pair of chords (a♭, b♭, c, e♭ and f) themselves make up the same form of 5-35 as that which forms the central chord of this sequence of three and which opens and closes the song. This form of 5-35 may thus be regarded as the "key-chord" of the song, since it is both the source of most of its harmonies and the origin and end-point of its harmonic trajectory.

(b) *Dust of Snow*

The song *Dust of Snow* (1942), another of Carter's Frost settings, demonstrates a similar carefully controlled use of diatonicism (see Ex.5.2). The texture is mostly spare, with only two independent parts, but changes to a four or five note chordal texture in the central contrasting section (bb.23-32). As in *The Rose Family*, type A and B sets predominate; however, while *The Rose Family* employs a gradual motion

[4] See Forte 1973: 46-60 for an explanation of similarity relations between pc sets.

between diatonic fields, *Dust of Snow* relies on a more abrupt contrast between harmonic blocks.

The opening section (bb.1-18), which set the poem's first four lines, stays exclusively in the field *E*. The sparing use of the pitch a (which is not introduced until bar 6, and then again only in bars 14-16) leaves a slight ambiguity so that a field of *(E/B)* might be inferred at the opening. Most of the harmonic material of this section is therefore of types A and B. The total pitch collection of the vocal line makes up 5-35, thus forming a central core of pitches around which the piano may elaborate. This relationship parallels the rhythmic one, in which the voice has a *cantus firmus* -like line in minims and semibreves, around which the piano has more rapid figuration in quavers.

This song makes more frequent use of type B sets, and its harmonic language is therefore rather more dissonant than that of *The Rose Family.* The first harmony heard is the type B tetrachord 4-14. This "key-chord" is presented in such a way as to emphasize its triadic components; the lower perfect fifth e-b and the upper minor third d#-f# create the effect of a superimposition of triads of E and B major. This effect is enhanced on the reappearance of the piano's opening gesture in bar 11, where the lower perfect fifth has an added g#, forming set 5-27. The latter is also the final chord of the song.

The contrasting central section primarily inhabits the diatonic field *(B♭/F)*, a tritone away from that of the opening and closing sections. This contrast extends to the nature of the harmonies used; the "change of mood" of the text is reflected in the turn towards the "softer" dissonance of type A sets. Set 4-26 (f,g,b♭,d) is sustained throughout in the piano part, while the bass oscillates between f and c in a manner

which mimics the tonic-dominant relationship, producing an alternation of sets 4-26 and 5-35.

The central section is approached via a brief transition (bb.19-22), during which harmonic instability is created through rapid fluctuations of diatonic field and the introduction of type C sets. The interval of a perfect fifth plays a pivotal role in this transition. This interval is prominent in the opening sonority 4-14 and is frequently sustained in the remainder of the opening section (see bb.6, 14 and 17-18). The transitional bars make use of pairs of perfect fifths to produce symmetrical tetrachords, namely 4-26, 4-20 and 4-8. The first of these is significant in this context since it may be formed either from a pair of perfect fifths or from a pair of minor thirds, the two intervals which are most prominent in the key-chord 4-14 as it appears at the opening of the song. A comparison of the pitch-class and interval-class content of the two sets reveals that they are in the close relation R_2R_p:

4-14 [0,2,3,7] [111120]

4-26 [0,3,5,8] [012120]

Since 4-26 is also a subset of the final chord 5-27, it may be regarded as a subsidiary key-chord for the song.

In bar 19, the pitch b is a pivot between two successive forms of 4-26 (b d f# a - c# e g# b), which together form 7-35, with the introduction of d♮ effecting a move to the diatonic field *A*. Once again, the perfect fifth is prominent at the top of the texture (d-a). This is contradicted in the following bar by the reintroduction of d# and a return to the motive of the opening bar (via a "passing" form of 4-20). However, the dyad c#-b of the latter is replaced in bars 20 and 21 by set 4-8, which is presented as two perfect fifths, g#-d# and a-e. In bar 22, the dyad g-d acts as a pivot

between two forms of set 4-26; while the upper perfect fifth is sustained in the right hand, the pitches of the perfect fourth f-b♭ in the left hand move outwards symmetrically to the perfect fifth e-b♮. This progression encapsulates the overall harmonic contrast in the song between the fields *(E/B)* and *(B♭/F)* and is repeated in bars 27-28.

(c) *Pastoral* for viola, clarinet or cor anglais and piano

The *Pastoral* is a much more extended and ambitious work than either of the brief songs described previously. Its harmonic language is based on similar premises, but is developed to a higher degree of complexity and sophistication, as an analysis of the opening paragraph (bb.1-45) will show (see Ex.5.3). Carter's use of sets as motives rather than purely as chords will begin to be examined, as will the contrapuntal interaction of sets presented linearly.

The prevailing field during these bars is *A* and the focal pitch is a, but, this field is not established immediately. By withholding the pitch d until bar 11, Carter restricts the harmonic field of the opening to *(A/E)*, or set 6-32. Type A and B sets are therefore available. The type B set 4-10 forms the opening sonority and is presented as two minor thirds (f#-a and g#-b). These two thirds are joined by another (a-c#) in bars 2-5, forming a total pitch combination of set 5-23. The f#-a dyad is sustained at the top of the texture in bars 1-6 and is prominent until bar 10, while the g#-b dyad is inverted to form a sixth in bar 2 and is then presented melodically in bar 3, forming the beginning of the work's first melodic motive. The introduction of the pitch e in bar 3 widens the total pitch field to 6-32. The viola's first phrase (bars 8-

12) forms 5-35, thus acting as a purer diatonic centre within the wider field suggested by the piano.

Within this field, there are certain motivic consistencies. Set 4-23 appears in two prominent forms. Its appearances are (a) as a melodic line of 4 quavers (b-c#-e-f#), which is gradually isolated from the g# which first precedes it in bar 3 (see bb.3, 5, 6-7, 7-8, 9, 10-11 etc.) and (b) as a pair of dyads, the perfect fifth e-b followed by the minor third f#-a (bb.6, 8-9, 10). The e and b are heard as neighbour notes to the f# and a. These two forms present the same set in different aspects; (a) as two major seconds separated by a minor third and (b) either as a perfect fifth and a minor third presented harmonically, or as two major seconds presented melodically in contrary motion. This kind of exploitation of the different intervallic patterns inherent in a set is a hallmark of Carter's technique. In bars 15-16, the melodic form of 4-23 is transposed and the second interval expanded, so that the two major seconds are separated by a perfect fourth (d-e-a-b) (piano right hand, imitated by viola).

The next harmonic turning point occurs in bar 11, where the pitch d is introduced (piano, left hand). This not only widens the diatonic field to *A*, but introduces a type C harmony for the first time. Set 4-13 is sounded in the piano, comprising a perfect fifth d-a and a minor third g#-b. These two dyads are related to the pair forming 4-23 as it appears in the right hand of the piano in bars 9-10 (perfect fifth e-b and minor third f#-a). In conjunction with the f# in the viola, this forms set 5-25. The > marking draws attention to this more complex sonority, which signals the beginning of a move away from the straightforward diatonicism of the opening.

Bar 14 marks the beginning of a long transitional passage, leading eventually to the establishment of a new tempo, quaver = 160, and diatonic field, *C#*, at bar 45.

During this transition new pitches and sets are introduced which disrupt the diatonic field of *A* and break away from the diatonic vocabulary laid out in Appendix 2. These new sets are the product of a divergence between the diatonic fields of two or more independent contrapuntal lines. Carter thus sets up a polarity between diatonic norms and chromatic disturbances which parallels the traditional distinction between consonance and dissonance.

In bar 16, the piano's b# and d# suggest in themselves a move to *C#* but are irreconcilable with the viola line, which still maintains *A*. In the following bar, b♮ in the piano contradicts the field of *C#*, and, in conjunction with a#, suggests the field *B*. The clash of b# against c# in the piano and the d♮ of the viola (b.16, second quaver) creates a momentary instance of 3-1 [0,1,2], the chromatic trichord, which is, of course, completely alien to the diatonic language, as is set 3-3, which immediately follows it [b#,c#,e], although both sets arise quite logically from voice-leading motions. Another form of 3-1 appears in the following bar, where the a#-b of the piano clashes with the a♮ of the viola.

The climax of the piano's phrase is a 6-note type C chord in bar 18, 6-Z25, which suggests a diatonic field of *D*, the latter being maintained (with the exception of bars 20-21) until bar 25. This chord, despite its dissonance, is spaced in such a way that perfect fifths and minor thirds are prominent, thus affirming its link with the simpler diatonic harmonies such as 4-23 and 4-13 of the earlier part of the work. The articulation of the chord in bar 18 recalls the very opening. The lower minor third c#-e brings an association with the earlier f#-a and g#-b, while the perfect fifth g-d at the top of the chord is sustained, thus forming an association with the sustained dyad f#-a of the opening chord.

Later in this transitional passage, there is further conflict between contrapuntal lines which, although diatonic in themselves, produce non-diatonic sets in combination. Interval classes 2, 3 and 5 continue to play an important role and set classes 3-7 and 3-9 are particularly prominent in this process.

In bars 30-35, the harmonic language reaches the maximum of dissonance and complexity thus far in the work. While the viola line in bars 30-35 maintains a diatonic field of *D*, the piano begins to diverge from this with rapid sharpward shifts. In the right hand of the piano in bar 33, with the sudden intrusion of a#, e# and b#, a form of set 5-23 arises, suggesting the field *C#*, while the viola and piano left hand maintain *D*. Several forms of set 3-7 are presented here; the piano has d-e-g (left hand) in bar 31 and e-c#-f# (left hand) and d#-b#-e# (right hand, lower line) in bar 33. The juxtaposition of the diatonic fields *C#*and *D* produces a series of verticals (4-13, 4-11, 4-6, 4-8, 4-19) which shows a progression away from the simpler diatonic sonorities towards more complex type C and non-diatonic dissonances. The same can be seen in bar 34, where the appearance of 4-9 on the third quaver as two perfect fourths separated by a tritone (b-e/e#-a#), is emblematic of the conjunction of two semitonally related diatonic fields. This is further exemplified by the juxtaposition of two semitonally related forms of 3-9 in the right hand of the piano in bars 34-35 (d#-e#-a#/ d-e-a).

In bars 36-42, the diatonic field oscillates between *C#* and *E/B* before settling on the former in bars 44-45. In bars 36-44, the interval of a perfect fifth plays a focal role; in particular, at the top of the texture, the fifths g#-d# and e-b alternate in chords 4-14 and 4-Z29 (these two sets being in the close relation R_2R_p) each of which contains a strong triadic component (3-11) with an "added" note between the third and

fifth of the chord, producing a strong allusion to the triads of C# and E. At the end of bar 42, both of these fifths appear together as a form of set class 4-20.

4. Non-diatonic harmonic principles.

While diatonicism is the norm for most of Carter's works of the early 1940s, many passages may be found which demonstrate other means of harmonic organization. During the earlier part of the period, the sonorities used often have a resemblance to conventional triadic patterns, and may appear to be alterations of them. At a further stage of removal from conventional harmony lie those sets which may be formed from the recombination of the "triadic" intervals - the major and minor third and the perfect fourth/fifth (interval classes 3, 4 and 5) - in unconventional patterns. This process of intervallic combination leads, in the later works of the period, to the establishment of repertoires or families of sets related through similarities of interval and pc content. Among these families of sets, symmetrical pitch structures are often privileged, since they offer an alternative to conventional means of achieving tonal focus. An important effect of considering harmony as the product of the combination of intervals is that "motives" begin to replace "chords" as the basic building units of harmony. It is important to note, however, that there are some works and passages where the harmonic organization is apparently resistant to schematic analysis, usually because the primary organizational function has been assigned to a parameter other than pitch. (See, for example, the discussion of the first of the *Eight Etudes and a Fantasy*, p.123 and Ex.5.12.)

(a) Triadic alteration and superimposition.

Mention has already been made of Carter's use of sets which resemble tonal triads altered by the addition of "extra" pitches, or "polychords" formed from the superimposition of two triads. In general, such chords are reserved for moments of important harmonic focus, such as beginnings, cadences and climaxes, and are often used as "key-chords" in the earlier works because of their association with the traditional function of tonal triads. Altered and superimposed triads as a category cross the boundary between diatonic and non-diatonic harmony, on one hand evoking familiar tonal phenomena, on the other, challenging conventional tonal hearing. Such examples of "bitonality" and "wrong-note harmony" link Carter strongly with other neoclassical composers and are among the features of his music which gradually disappeared as he began to find a more individual style.

The simplest such chords are those which may be formed through the superimposition of elements from tonic and dominant triads. These chords are, of course, members of the family of diatonic sets laid out in Appendix 2, but they are discussed here because of their link with non-diatonic sets. Several examples may be found. The use of 4-14 and 5-27, resembling the superimposition of triads of E major and B major at the opening and close of *Dust of Snow*, has already been remarked. Similar use of 5-27 and its subsets is made in the Piano Sonata (see Ex.5.4); 5-27, formed as a superimposition of triads of B and F# majors, is the closing sonority of the second movement; this chord and its subset 4-14 are also prominent near the beginning of the first movement (4-14 appearing in bb.20 and 25, 5-27 in b.30). Such fusions of tonic and dominant tend to function in a manner similar to a

conventional tonic by confirming the diatonic field of a passage, but nevertheless contain a degree of tension and ambiguity. After the Piano Sonata, Carter's works contain few of these types of sonority, which suggest tonal models so strongly.

More complex superimpositions involve elements from triads which cannot be reconciled within a single diatonic field. These were frequently used by Carter in the early 1940s as a means of encapsulating tonal conflict or ambiguity. One of the most dramatic examples is the appearance of set 5-21 [0,1,4,5,8] at the climax of the first movement of the Piano Sonata (bb.246, 249-251, 262-263) (see Ex.5.5). This set is formed from the superimposition of triads of G♭ major and B♭ major and expresses the pivotal role of the pitch b♭ in the work. It conflates a triad of B♭ in its own right as a tonic, with a triad (enharmonically respelled) of the dominant of B major, the tonic key of the Sonata, in which b♭/a# is merely the leading note. The pivotal nature of the climactic chord is clearly revealed in bars 262-263, where first a B♭ triad and then a G♭ triad are allowed to emerge from the complete five-note chord. The octave doublings of the b♭ and f obviously reinforce the traditional feel of the texture here.

A similar relationship, more gently expressed, occurs at the end of the song *Voyage* (1943) (see Ex.5.6). The final chord here, 4-19 [0,1,4,8], is constructed from the superimposition of a B major seventh and a triad of E♭ major. Once more, certain pitches are pivotal; d#/e♭ and a#/b♭ may appear as the third and seventh of the chord on B or as the root and fifth of the E♭ chord and the sense of tonal centre is delicately balanced between the two keys.

Another special category of harmony employed by Carter requires separate consideration. This may be informally described as "seventh chords" and includes

both diatonic and non-diatonic harmonies. The former include 4-26 [0,3,5,8] - the "minor seventh" chord - and 4-20 [0,1,5,8] - the "major seventh" chord. These two sets are both remarkable for having a symmetrical interval class structure which includes a pair of ic5s, a fact which will become important in the discussion of Carter's later music. The non-diatonic sets include 4-18 [0,1,4,7] - which may be presented as a "diminished triad plus major seventh" - and 4-19 [0,1,4,8] - which may be presented as a "minor triad plus major seventh" or "augmented triad plus major seventh". The "dominant/half-diminished seventh" chord 4-27 [0,2,5,8] is comparatively rarely used by Carter. An important relative of 4-18, 4-19 and 4-20, which deserves consideration here is 4-17 [0,3,4,7] - which may be presented as a triad with major and minor third. This set, like 4-20 and 4-26, has a symmetrical interval structure, and like 4-18 and 4-19 may appear as a non-diatonic alteration of a conventional triadic model. The relationships between these sets are summarized in Table 5.2:

Table 5.2 Similarity relations between "quasi-seventh" chords

4-17	[0,3,4,7]	[102210]
4-18	[0,1,4,7]	[102111]
4-19	[0,1,4,8]	[101310]
4-20	[0,1,5,8]	[101220]
4-26	[0,3,5,8]	[012120]

	4-17			
4-18	R_2R_p	4-18		
4-19	R_2R_p	R_p	4-19	
4-20	R_1R_p	R_p	R_2R_p	4-20
4-26	R_p	R_p	R_p	R_p

The variety in Carter's use of these chords is exemplified by examining passages from works spanning the entire period and crossing the stylistic divide. The song *Warble for Lilac-time* (1943) matches the unfettered joyousness of the text with a harmonic language that draws its richness and vibrancy from its original use of diatonic and triadic elements. The central slow section (bb.90-127) provides an excellent example of this (see Ex.5.7); the majority of sonorities are formed from the combination of triadic components, often moving in parallel. Sets 4-20 and 4-26 - the "major" and "minor seventh" chords - are particularly prominent. Stepwise melodic motion predominates, with motion in parallel perfect fifths and fourths, thirds and complete triads pervading the texture.

A rather more ironic use of such triadic sonorities can be found in the Piano Sonata's first movement (see Ex.5.8). Between bars 109 and 116, the texture contains two main elements, a sustained triad held in the middle range of the piano, and fragmentary melodic gestures played in octaves. The first of these elements parodies the traditional harmonic device of gradually changing from one triad to another by chromatically altering one note at a time. The pitch b is pivotal in the move between triads of G major and B major; however, the two intervening steps are not tonal triads but are both examples of the non-diatonic atonal set 4-19.

A similar passage from the first movement of the Quartet Sonata (bb.9-16) shows this technique used more extensively and in a harmonic context far removed from the extended diatonicism of the previous two examples (see Ex.5.9). It will be noted that sets 4-17, 4-18, 4-19 and 4-20 are prominent among the sustained sonorities. (A more thorough discussion of this passage will be undertaken in Chapter 10.)

(b) Combination of intervals.

The quasi-triadic sonorities described above are really a special case within the more general principle of Carter's harmonic practice, which is the creation of larger harmonic units from the combination of individual intervals. The simplest and, at this stage, the most important example of this technique is the creation of tetrachords from pairs of dyads. An examination of the various charts of harmonic materials drawn by David Schiff from the composer's sketches to illustrate his discussions of the works shows the extent of this preoccupation, which culminated in the discovery of the all-interval tetrachords. (See in particular, the charts for the Cello Sonata and the Quartet Sonata, [Schiff 1983: 137 and 165].) Appendix 3 takes these charts as a starting point for a complete classification of tetrachords according to their dyadic content and will be an important point of reference for the following discussion. The appendix is set out in two parts; the first takes each possible combination of the six interval-classes and lists all the tetrachords which may be formed therefrom, together with their interval vectors and a diagrammatic representation of their interval-class and pitch-class structure and content. This part of the appendix begins with all the symmetrical tetrachords, which is to say, all those which may be formed from pairs of identical interval classes. The second part of the appendix summarizes the first part by listing each tetrachord and showing the two or three different ways in which it may be constructed from pairs of dyads. The first part of the appendix shows that there are twenty different "families" of tetrachords, varying from two to five in membership. The second part of the appendix shows that the membership of these families overlaps to a considerable extent, since each tetrachord belongs to either two

or three families. Without going into too much theoretical exegesis, a few important observations may be made. The first is that the two all-interval tetrachords 4-Z15 and 4-Z29 are obviously distinctive in that they may be formed in three different ways, each of which involves a pair of unique interval classes; less obvious is the fact that these two tetrachords are the only ones which may be formed by pairing interval classes 3 and 6. Other observations to be made regarding these two sets will lead to an understanding of the underlying symmetry of the network. 4-Z15 pairs interval class 1 with ic2, and ic4 with ic5, whereas 4-Z29 pairs ic1 with ic4, and ic2 with ic5. Interval classes 1 and 5 thus stand in a reciprocal relation, as do ics2 and 4, and ics3 and 6, all of which can be seen throughout the network of tetrachords. For example, there are exactly the same number of sets (4) in the family formed from ic1+ic2 as there are in that formed from ic2+ic5; a similar balance exists between the numbers in the families ic1+ic3 and ic3+ic5 (5), ic1+ic4 and ic4+ic5 (4), and ic1+ic6 and ic5+ic6 (2).

This symmetry extends to the relationships between the individual members of these families; if, for example, the members of the families ic1+ic3 and ic3+ic5 are compared, it will be observed that the interval vectors for one family may be obtained by exchanging the ic1 and ic5 entries in the interval vectors of the other group (a process identical to the so-called "M5 mapping" [Rahn 1980: 153-5]). Where these are identical, obviously the same set will be represented in both families, otherwise each set will be balanced by an R_1 relative (see Table 5.3):

Table 5.3 Comparison of interval vectors for tetrachords formed from ic1+ic3 and ic3+ic5

ic1+ic3		ic3+ic5	
set	interval vector	set	interval vector
4-1	[321000]	4-23	[021030]
4-4	[211110]	4-14	[111120]
4-13	[112011]	4-13	[112011]
4-18	[102111]	4-18	[102111]
4-20	[101220]	4-7	[201210]

The same relationship holds between each of the pairs of families which hold one dyad in common and exchange ic1 for ic5. Interestingly, it also holds between the groups ic1+ic1 and ic5+ic5.

There are three tetrachords which are multiply symmetrical, which is to say that they may only be formed from pairs of similar dyads; these are 4-9 (ic1+ic1, ic5+ic5 or ic6+ic6), 4-25 (ic2+ic2, ic4+ic4 or ic6+ic6) and 4-28 (ic3+ic3 or ic6+ic6). Between them, these tetrachords exhaust the possibilities for ic6+ic6 and partition the remainder of the pairs of similar dyads symmetrically, according to the reciprocal relation mentioned above.

It should be stressed that, at this stage in his development, Carter appears not to have recognized the symmetrical structure of this network, or, if he did, it was probably not important to him. As several other writers have pointed out, Carter is not the kind of composer for whom the systematic exploitation of theoretical possibilities is the main creative stimulus. The exposition of these theoretical possibilities therefore serves only as a background to the particular focus of Carter's interest.

In the earlier part of the period 1945-55, the sets which proved most useful to

Carter were found among those which combined the "triadic" interval classes, ics 3, 4 and 5 (i.e those ics which may be found in the interval vector of the "major/minor" triad 3-11 [0,3,7]). Much of the "quasi-diatonic", "quasi-triadic" and "quasi-tonal" music of this period can be explained with reference to the tetrachordal families formed by ic3+ic3 and ic5+ic5 in particular.

(i) Piano Sonata, second movement, bb.1-26

This passage, which has already been examined with regard to the handling of diatonic fields, also offers an excellent example of Carter's manipulation of tetrachords as harmonic motives. The earlier analysis of the passage dwelt principally on diatonic orientation and was able only to classify individual vertical sonorities as diatonic or non-diatonic (see Chap.4, pp.81-3). However, equipped with a means of classifying sets or chords according to their intervallic content, a rather more penetrating examination may be undertaken.

Ex.5.10 approaches the passage in two parallel ways. Firstly, on the upper pair of staves, each vertical sonority is shown, as in Exx.5.1-5.3, and each set of 3 to 5 members is identified. Secondly, on the lower pair of staves, certain motivically significant tetrachords are highlighted. The upper staves show a situation already familiar to us: the trichords 3-7 and 3-11 are by far the most numerous sonorities, with 4-26, which contains both these sets, being the most frequently occurring tetrachord. These are all diatonic type A sets and may be regarded as harmonic norms for the passage; they act as stable sonorities at the beginnings and ends of phrases, while the type B and C sets represent slightly greater dissonances. As has been remarked

before, the climactic point of the passage in bars 21-5 sees the only non-diatonic sonorities brought into play. The lower pair of staves in Ex.5.10 show occurrences of the three principal pitch motives used to weave the fabric of this passage. All are symmetrical and may be constructed from interval classes 3 and/or 5, thus forming a tightly knit group. Carter uses these sets not merely as chords, but as motivic units; motive x presents set 4-10 in the form ic3+ic3 (in this case, as two minor third or major sixth dyads connected by parallel motion through major seconds); motive y presents set 4-23 in the forms ic3+ic5 (y^1) (a minor third, moving outward symmetrically to a perfect fifth) and ic5+ic5 (y^2) (parallel perfect fourths or fifths, moving through a major second); motive z presents set 4-26 in the form ic3+ic3 (two minor thirds moving through a perfect fourth or fifth). In each case, the individual ic3 or ic5 dyads may act as pivots between overlapping forms of these sets. For example, at the end of bar 19, the dyad g#-b in the left hand may be associated with the preceding dyad f#-c#, forming y^1, as well as forming two statements of motive x, one vertical (with the dyad a#-c# in the right hand), the other horizontal (with a similar dyad an octave lower in the left hand at the beginning of bar 20). The association of these dyads into patterns which mimic conventional voice-leading through stepwise connection, especially in parallel, is so strong that it survives the registral dislocation in bars 21-26. Other symmetrical tetrachords which pair ic5s, particularly 4-8 and 4-20, also play a part in the harmonic organization of this passage.

One factor which complicates an analysis of this passage according to intervallic combinations is the presence of the equivocal "false relation" b/b♭. The substitution of b♭ for b into motive y^1 shown in Example 5.10 produces a form of the type C set 4-16, which in these circumstances may be regarded as a distortion of the

"pure" type A 4-23; this happens in bars 9-10 and 13-14. The association of set 4-16 with the pitch class b♭ as an agent of harmonic tension is made near the beginning of the passage; at the end of bar 3, the first appearance of b♭ also brings the first vertical sonority denser than a trichord - set 4-16.

(ii) Cello Sonata, second movement, bb.91-112

This passage makes an interesting comparison with the preceding one (see Ex.5.11). The basic principle of harmonic construction is similar, in that it is built from sets which contain interval classes 3 and 5, frequently using these dyads as pivots between tetrachords. However, the sense of diatonic orientation fluctuates much more rapidly here and the vocabulary of sets used is much wider, including several non-diatonic sets. Although the range of sets used is apparently diverse, it will be observed that the great majority fall into the families of tetrachords formed from ic3+ic3, ic3+ic5 and ic5+ic5 (see Appendix 3). This statement applies equally to sets arising from linear and vertical combination. The context of this passage within the movement and the origins of its harmonic vocabulary will be explored in more detail in Chapter 8.

(iii) *Eight Etudes and a Fantasy*, Etude I

This work is a collection of brief pieces, each focusing on a single aspect of compositional technique, whose concentrated development here led to the liberation

and enrichment of Carter's musical language in the immediately succeeding pieces, the First String Quartet and the Quartet Sonata. The first etude is described by Schiff as a study in the use of musical space [Schiff 1983: 143]. Its harmonic language is typical of the later Carter in that there is no reference to a tonic or to particular diatonic fields, and a wide range of sets, both diatonic and non-diatonic, (predominantly trichords and tetrachords) is used in both the vertical and horizontal dimensions (see Ex.5.12).

However, the harmonic language of this work is perhaps less unified than that of the passages previously examined. The probable reason for this is that the exploration of various kinds of texture and spacing is more important here than that of a particular harmonic vocabulary. Nevertheless, certain characteristics may be observed which lend cohesion to the piece. Combinations of interval classes 3, 4 and 5 predominate. This is particularly clear towards the end (from bar 15 onward), where much of the texture is constructed as pairs of dyads. Set 4-12 [0,2,3,6], spaced as ic3+ic4, becomes a temporary point of focus in bars 15-16; this is an important junction in the work's form, as a condensed recapitulation of the opening gesture occurs in bar 16.

(c) The Kh(6-20) subcomplex.

During the later part of the transitional period, Carter attempted to find means by which to achieve coherence within the liberated harmonic world of intervallic combination. One of these, as has been recognized and will be discussed in the succeeding section, was the use of the all-interval tetrachords as formative or

integrative factors. Another important and distinctive harmonic resource, which has been less widely recognized, is the group of sets which may be described, using Fortean terminology, as belonging to the Kh subcomplex about the hexachord 6-20. In general, Forte's concepts of set complexes and nexus sets play little part in the technical vocabulary of this study. However, the Fortean description of the membership of the group, and of the relations between them, is apt in this case, since they correspond closely with the relationships exploited by Carter.

Set 6-20 [0,1,4,5,8,9] is one of the "all-combinatorial" hexachords; in other words, it may be mapped on to itself or its complement by subjecting it to transposition, or to retrograde, inversion or retrograde inversion combined with transposition [Babbitt 1955]. One result of this property is that there are only four different possible transpositions of this hexachord; only 6-35, the "whole-tone scale", has fewer. Two further consequences of this property are (i) that the set has multiple internal symmetries, and (ii) that it has a relatively small number of different subsets. The Kh subcomplex centring on 6-20 has only nine members. (Again, among the hexachords, only 6-35 has fewer.) The practical consequences of these properties are respectively (i) the symmetry of 6-20 itself means that it may be exploited as a striking referential sonority, and (ii) the restricted number of members of Kh(6-20) creates the possibility of using a small and tightly unified group of sets as a basic vocabulary. Thus 6-20 would appear to possess the properties appropriate for a "key-chord" described in section 2 of this chapter. Indeed, it appears to play this role in two major works of the period, the first movements of the Cello Sonata and the Quartet Sonata.

Before the role of 6-20 in these works is discussed, the properties of its subsets

will be examined. The interval vector for 6-20 [303630] is unique among hexachords in that it contains two zero entries - those for interval classes 2 and 6. The resulting preponderance of thirds and fourths/fifths creates a harmonic vocabulary in which the quasi-triadic or "seventh" sets, described in section 4 (a) of this chapter, are the norm. 6-20 has only one pentachordal subset, 5-21[0,1,4,5,8], which is therefore identified very closely with the parent set. Of the four tetrachordal subsets, three, 4-7 [0,1,4,5] 4-17 [0,3,4,7], and 4-20 [0,1,5,8], are themselves symmetrical and form a very tightly knit group, since they form a "transitive tuple", with the similarity relation R_1R_p holding between each pair[5]. The fourth tetrachord, 4-19 [0,1,4,8], is in the relation R_2R_p with each of the other tetrachords. The trichordal subsets are 3-3 [0,1,4], 3-4 [0,1,5], 3-11 [0,3,7] (the "major/minor triad") and 3-12 [0,4,8] (the "augmented triad"). 3-3, 3-4 and 3-11 are all in the relation R_1R_p with one another, while 3-12 is in the relation R_p with each of the other trichords. Thus the members of the Kh(6-20) subcomplex form a distinctive and highly unified harmonic vocabulary.

(i) Cello Sonata, first movement.

As stated in section 2 of this chapter, differing opinions have been expressed regarding the harmonic constitution of this work. Schiff describes the set formed by the pitches of the first bar [0,1,2,5,6,8][6], or 6-Z43, as containing the "basic harmonic material for all four movements" [Schiff 1983: 136]. He states that this set is

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[5] See Forte 1973: 52-56 for an explanation and discussion of transitive set relations.

[6] Wrongly printed as [0,1,2,5,7,8] in the first edition of Schiff's book. [Schiff 1983: 137]

immediately repeated in bars 3-4 in transposed form, as though to confirm its importance.[7] However, the a♭ in bar 3 does not belong to this set, a fact which suggests that the reappearance of 6-Z43 here may not be as important as those of other, smaller sets. (The a♭ forms part of a vertical statement of 4-17, for example.) Moreover, 6-Z43 appears to play no further part in the work, leaving its status as "key-chord" or "source-set" in some doubt.

More significant are the tetrachords which Schiff derives from the opening bar [Schiff 1983: 137, "Chart 9"] (see Ex.5.13). These break down into two groups according to the pairings of dyads described above in section 4(b); those formed from ic4+ic4 and those formed from ic3+ic5. The link between the two groups is 4-7 [0,1,4,5], the opening chord of the movement, which may be formed in either way. An inspection of Schiff's "Chart 9"[8] yields two interesting points; (i) the ic4+ic4 tetrachords which Schiff lists are 4-7, 4-17 and 4-20, the three members of the transitive tuple described in section 4(c), while the ic3+ic5 tetrachords include 4-18, which, as discussed in section 4(a), is closely related to sets 4-17, 4-19 and 4-20; (ii) of the six different tetrachords listed by Schiff, only four are subsets of 6-Z43. Taken in conjunction, these observations suggest that 6-20 might act as a more convincing "controlling set", if one is to be found, than 6-Z43.

Kies goes as far as to ascribe the entire pitch material of the movement to the manipulation of two complementary forms of 6-20, which he terms H_1 [11,0,3,4,7,8]

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[7] Harvey repeats this observation, and illustrates it in his Example 3.10 [Harvey: 34].

[8] The sets and relations described here are reproduced by Harvey in his Example 3.12. The latter contains two errors; the interval vector of 4-13 appears as [110211] (correct form [112011]) and the prime form of 4-18 appears as [0,1,6,9] (correct form [0,1,4,7]).

and H_2 [1,2,5,6,9,10] [Kies: 63]. Although Kies does not use Fortean terminology, he is clearly aware of the symmetries and transitive similarity relations which exist between members of the Kh(6-20) subcomplex, as is shown in his Figures 11 and 12 [Kies: 66, 75] and in the appendix to his study. However, difficulties arise when Kies attempts to maintain the separation between H_1 and H_2 , as certain passages can only be explained by describing them as using a mixture of elements from both hexachords. This implies a kind of conflict between the hexachords which is in practice very difficult to detect, since the sense of a tonal centre fluctuates almost constantly. Furthermore, Kies finds he is obliged to consider sets which are not subsets of 6-20, or else to place pitches in parentheses in his analysis if they do not belong to the prevailing hexachord.

Clearly, an account of the movement's harmonic resources should acknowledge the importance of 6-20 without forcing the music into a straightjacket by attempting to show that it is continually present (something the composer himself disclaims - see the quotation on p.97). The proper function of 6-20 is to act as a point of focus, which crystallizes the intervallic relationships existing among the primary constituents of the movement's harmonic vocabulary. Nowhere is this shown more clearly than at the end of the movement (see Ex.5.14). Here the texture becomes "frozen" into isolated chords, thus focusing the listener's attention on the harmonic atoms from which the music is constructed - the interval classes 1, 3, 4 and 5. The resulting vertical sonorities may therefore all be related to 6-20 and, on the last beat of bar 127, the hexachord duly appears, its status as a goal emphasized by its symmetrical spacing.

The emergence of 6-20 as a focal sonority in the first movement of the Cello Sonata is one example of this work's "transitional" nature. The first movement,

according to Schiff [Schiff 1983: 136], was the last to be composed, and therefore represents the furthest extreme in a process of harmonic concentration which can be traced through the work. The harmonic language of the second movement (the first to be written) seems much less focused by comparison; 6-20 plays little or no part in its harmonic make-up, which is instead dominated by a wide range of tetrachords combining interval classes 3 and 5. Only later in the composition of the work did Carter discover the integrating power of the nucleus of three tetrachords, 4-7, 4-17 and 4-20 and of their common superset 6-20. However, once this had been discovered, he was able to return to it in a later composition and exploit it even more consistently.

(ii) Quartet Sonata, first movement.

Carter's use of 6-20 and its subsets in this work exploits their symmetrical properties to the utmost. A full discussion of the harmonic structure of this movement will be reserved for Chapter 10. However, a few salient moments will be examined here in order to illustrate Carter's more systematic use of Kh(6-20) members in this later work. The appearances of 6-20 in the movement are few, but are of crucial importance. The first forms part of the initial "splashing" gesture of the harpsichord (see Ex.5.15). This widens symmetrically about an axis of d-e♭ and takes the form of tetrachord 4-17 followed by 6-20, the former partitioned into ic3+ic3, the latter into two forms of 4-20. This symmetrical division of the hexachord between the two hands is adopted as the characteristic spacing, and it recurs in bar 24 and in the final bar (both of these examples in the harpsichord part).

The passage in bars 23-4 is an expanded inversion of the opening gesture and is

the harpsichord's most extended *ff marcato* statement (see Ex.5.16). It is framed by two complementary statements of 6-20 [0,1,4,5,8,9] and [2,3,6,7,10,11], the former partitioned into two trichords 3-3 and the latter into two 4-20s. These two framing statements of 6-20 share a common axis of symmetry about e-f, although the intervening material departs from strict symmetry.

In the final bar of the movement, 6-20 appears as the goal of an extended process of harmonic expansion across the range of the harpsichord, beginning in bar 30. The twofold 4-20 spacing is retained, but with the player's hands at opposite extremes of the keyboard rather than overlapping in the centre. (The right hand f and left hand b♭ mark the harpsichord's pitch extremes for the entire movement.) As Example 5.17 shows, the whole of the passage from bar 30 to the end of the movement may be seen as a huge expansion of the opening symmetrical "wedge" gesture.

6-20 may thus be regarded as a true "key-chord" in this movement since it appears as a starting point and as a goal on both the large and the small scales. These appearances may be seen as strictly symmetrical pillars, between which the looser symmetries of the intervening material hang.

(d) The all-interval tetrachords.

Carter's use of the all-interval tetrachords is one of the best-known aspects of his harmonic technique. However, as has been suggested above (see the references to [Gamer 1973]), detailed discussion of the composer's actual practice has been relatively sparse. Schiff briefly draws attention to the use of 4-Z15 in the opening

cello solo of the First Quartet;

> Its strong structural possibilities can be seen in the cello solo which opens the First Quartet; the chord is stated five times in different inversions and shapes. Note that in this passage and throughout the Quartet Carter uses chords closely related to (0, 1, 4, 6) - (0, 2, 5, 8) in bar 2, (0, 1, 3, 7) in bar 6, (0, 3, 4, 7) in bar 7 differ from the source chord by only one pitch. [Schiff 1983: 64]

Schiff's analysis of this passage makes an interesting comparison with that by Gamer, the former attempting to show the unity of its harmonic language, the latter its diversity. Schiff's remarks regarding related sets are suggestive and require further exploration. However, there is one set which he appears to rule out - the other all-interval tetrachord 4-Z29 [0,1,3,7] - which he states "Carter avoided at first because of its strongly tonal feeling" [: 64], although his own analysis shows that it is prominently presented in bar 6 (third crotchet). In fact, it will be seen that 4-Z29 plays an important subsidiary role in the Quartet.

The most explicit expressions of 4-Z15 come towards the end of the work. In the climactic passage at bar 430 and in bars 438-443, a ten-note chord is sounded, leaving the pitches a#, c, d# and e exposed. After this point, the tetrachord appears more frequently as a chordal sonority - see for example, bars 449-451, 455 and 477 (Ex.5.18).

However, there are less obvious ways in which 4-Z15 influences the harmonic language of the work. For example, it may be combined with other important related sets to form larger supersets. By way of illustration, we may examine the second violin part at the opening of the first movement "proper" (bb.22-30; see Ex.5.19). A straightforward segmentation of the passage reveals that 4-18 is a particularly prominent set, usually articulated as a trichord (3-5 or 3-10) plus a melodic semitone. The importance of 4-18 here may be traced back to the second violin's first entry

(b.12), during the cello cadenza, where the combination of the two instruments forms this set. 4-Z29 is also prominent as the opening motive of the line (also recalling the first entry). The succeeding passage develops the relationship between 4-18 and the two all-interval tetrachords. It will be noted that 4-18 differs from each of the latter by only one pitch (4-Z15 [0,1,4,6], 4-18 [0,1,4,7], 4-Z29 [0,1,3,7]), and may thus form a close association with both.

In the first bar of the passage, the second violin states the octad 8-6 [0,1,2,3,5,6,7,8], articulated as 4-Z29 followed by 4-12. However, alternative segmentations reveal that 8-6 may be partitioned into two forms of 4-18 and, furthermore, that it contains both of the all-interval tetrachords no fewer than four times each. This set may therefore be regarded as a particularly rich source of harmonic material, saturated with forms of significant sets. In the bars that follow, the second violin part remains under the influence of this group of three tetrachords and their supersets. In bars 22-26, the pitches form 6-Z19 [0,1,3,4,7,8], which contains 4-18 twice and 4-Z29 once. During bars 27-30, as the part becomes denser, moving in vertical dyads and triads, successive pairs or trios of chords form pentads or hexachords, each of which contains 4-18 or either or both of the all-interval tetrachords or combinations of them:

b.27	6-Z50	(2 x 4-Z15, 2 x 4-Z29, 4-18)
	5-20	(4-Z29)
	6-Z36	(4-Z29)
b.28	5-31	(4-18)
	6-16	(4-Z15, 4-Z29)
	6-Z13	(2 x 4-Z15, 2 x 4-18, 2 x 4-Z29)
b.29	5-32	(4-Z15, 4-18)
	6-Z26	(2 x 4-Z29)

Thus, although the tetrachords 4-Z15, 4-18 and 4-Z29 are not always clearly

prominent on the surface of the musical texture, they play a pervasive role in the formation of the harmonic language. A comparison of the second violin part with that of the cello during part of the same passage (bb.22-26) shows that similar processes are at work in the shaping of this line.

Whereas the previous example has shown Carter's use of the all-interval tetrachords in creating individual parts or lines, examples taken from much later in the work will show how all four parts are harmonically coordinated. Once again, attention will be focused on the relationship between 4-Z15, 4-18 and 4-Z29. 4-18 is prominent in Part III (*Variations*) of the Quartet, as part of a thematic idea; the "chorale" motive [Schiff 1983: 161] consists of two inversionally related forms of this set, sharing two pitch-classes. The varied repetitions of this motive make use of subsets and supersets of 4-18 to produce effects of harmonic relaxation and intensification respectively (Ex.5.20). In the richly chordal passage from bars 392-402 of Part III, the relationship between the "chorale chord" 4-18 and the two all-interval tetrachords is vividly exploited. The texture is extremely dense, varying from four to eight parts, but coherence is achieved through the almost constant presence of 4-Z15, which runs through the texture as a core sonority. Example 5.21 demonstrates this; each vertical sonority in the passage is given its set label and an indication of the number of times 4-18 and the two all-interval tetrachords are contained within them. Particular attention should be given to the three appearances of 5-32 [0,1,4,6,9] which contains both 4-Z15 and 4-18. However, even more remarkable is Carter's control of the larger sonorities (septads and octads) which contain high multiples of all three tetrachords. Significantly, the richest of these, 8-28, is reserved for the climax of the passage; being multiply symmetrical, it contains all three tetrachords eight times over.

CHAPTER 6: VOICE-LEADING AND LINEAR MOTION.

The preceding chapters have dealt with the local associations of pitches into fields and sets on the surface of Carter's compositions. Analysis of this music by these means reveals something about the harmonic vocabulary employed by the composer, but little about the syntax of musical construction. Sets and fields are "democratic" entities, whose members are indistinguishable from one another in terms of importance, but in practice, we are clearly able to hear that "some notes are more equal than others", since Carter's transitional music, in common with much other post-tonal music, creates hierarchical relationships among pitches through the adaptation of tonal procedures.

This is not to say that post-tonal music exhibits the same degree of structural unity as tonal music. The structural levels which, according to Schenkerian theory, govern tonal music, are indivisible unities, held in relationship through a similarly indivisible hierarchy, in which every element is referable to one of greater structural importance and ultimately to the *Ursatz*. In post-tonal music, however, such hierarchies may be loose or fragmentary, since the *a priori* elements and relationships which exist for tonal music are absent and cannot be replaced by any other than those determined within the context of the individual work. In a certain body of post-tonal music, which is sometimes described as exhibiting "extended tonality" [Schoenberg, 1969: 76], the harmonic and contrapuntal relationships employed bear some resemblance to those of tonality. These may function in a way which is genuinely parallel to tonal practice, or they may mimic the appearance of tonal relationships (or parody them) while actually obeying other, non-tonal, principles such as symmetry or

complementation.

This chapter will examine various ways in which Carter shapes musical structures and will proceed from the small to the large scale, but first, a preparatory discussion of terminology will undertaken. The terms "foreground", "middleground" and "background" are used here informally as an indication of scale, rather than in the strict Schenkerian sense. The terms "prolongation" and "association" must also be examined, since they encapsulate some of the principal differences between concepts of tonal and post-tonal structure. "Prolongation" refers to the process in tonal music whereby the content of a lower structural level is created through the linear elaboration of a harmonic entity on a higher level. "Association" - a term coined by Joseph Straus [Straus, 1987] in order to explain the workings of post-tonal music - is simply the mental connection of pitches which are perceived to be structurally important and which, taken in conjunction, may be regarded as forming a unity on a higher level. Prolongation would appear to be the stronger principle, association the weaker, but more adaptable. In Straus's theory, patterns of association are in effect the "composing-out" of motivic pitch-class sets, although they may resemble traditional tonal prolongations:

> In many twentieth-century works musical motions over large spans of time seem to follow traditional tonal patterns, like the descending perfect fifth. Usually, however, their customary meaning is effectively neutralized. They evoke traditional practices but derive a more potent meaning from the specific post-tonal context in which they occur.[...] Large-scale motivic statements frequently provide coherence over large musical spans. The tones that make up a motive can be associated in a variety of ways, by register, timbre, metrical placement, dynamics, instrumentation, articulation, or shared value in any musical domain. [Straus, 1990: 169-70]

While acknowledging the usefulness of the concept of association, a degree of caution should be exercised in its application. An analysis which attempts to show a

continuous, unified middleground or background, consisting of associated pitches, may be as dubiously grounded as one which attempts to show atonal "prolongation". When the criteria for assigning structural weight to particular pitches are fundamentally subjective, the danger exists that facts will be distorted to fit the theory; specifically, the discontinuous and fragmentary nature of post-tonal structures may be misrepresented by a theory which attempts to "reveal" connections and identities.

Another important factor is the simple issue of scale in relation to aural perception. A small-scale motion which resembles a tonal prolongation at the foreground level may be accepted as such, but if repeated and expanded at the middleground level may be downgraded to an association, while at the background, even an association may not be perceptually valid. The importance of factors other than pitch in determining patterns of association (see the quotation from Straus, p.135), may be interpreted as a sign that, in the long run, specific pitch relationships are bound to lose their efficacy as the principal means of ordering musical structure in post-tonal music. Carter's evolution of rhythmic, temporal, intervallic and timbral schemes of relationship in his later work would appear to be a practical acknowledgement of this fact.[1]

1. Foreground.

The foreground is the level at which the diversity of tonal and post-tonal

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[1] See [Bernard, 1990(b): 352]; "The real issue here is whether structure in Carter's music beyond the level of local, note-to-note considerations can in fact be grasped by means of an analytical method based upon assumptions of priority for pitch-class relationships.[...] Relegating all other domains [...] to the status of the 'presentational' seems rather too blithe a dismissal of Carter's claim that such matters are every bit as important as pitch class."

techniques employed by Carter is most clearly revealed. In common with other composers working within the language of extended tonality, Carter's use of or reference to tonal techniques has several guises. He may make use of genuinely functional tonal relationships, he may alter these relationships so that their conventional function is still discernible but their surface appearance is unconventional, or he may shape non-tonal elements into patterns which allude to tonal ones. This section will focus on several harmonic and contrapuntal phenomena which have their origin in tonality, but which are extended or adapted in Carter's transitional phase; (a) the tonic-dominant relationship, (b) the neighbour note, (c) linear progression, (d) arpeggiation, (e) octave doubling and octave transfer.

(a) The tonic-dominant relationship.

The relationship between the scale steps of tonic and dominant and their respective triads is the most fundamental in tonal harmony. For music to be perceived as tonal, we must be aware not only of a central tonic which governs harmony and counterpoint, but also of a structural counter-pole - the dominant - whose existence at first challenges the supremacy of the tonic, but ultimately affirms it by acting as a "leading-note sonority" which must proceed (resolve) to the tonic. In the music of extended tonality, we may see a split between these two dominant functions of structural counter-pole and leading-note sonority, so that each may be taken by a different pitch element.

One of the simplest and most characteristic uses of the dominant in tonal music is in alternation with the tonic at the opening of a work. The creation of a I-V-I-V...

pattern serves to prolong the tonic and thus establish the tonality with the greatest economy. Adaptations of and allusions to this technique are frequent in Carter's earlier music (see Ex.6.1). Example 6.1(a) is taken from bars 4-7 of *The Rose Family*. Here, the entry of the voice suggests an alternation of scale degrees $\hat{3}$ and $\hat{2}$. The motion of the bass ostinato also suggests an alternation or amalgamation of tonic and dominant over a tonic pedal, but since this is not coordinated with the vocal part, the correspondence with the conventional tonal model is not straightforward.

A similar situation is presented in Ex.6.1(b), taken from bars 5-8 of the *Pastoral*. Here it will be noticed that the pitch f# forms part of the quasi-tonic sonority. The dyad e-b, whose pitches act as neighbours to f# and a, plays the role of quasi-dominant and the pitch a persists as a tonic pedal in the bass. Once again, a straightforward tonal reading is complicated by contrapuntal factors; the moving part in the piano left hand begins with g#-b, which in itself suggests the dominant, but is so frequently sounded with the f#-a "tonic" that it is practically amalgamated with it.

Ex.6.1(c) is the first two and a half bars of *Voyage*. As in Ex.6.1(a), the upper part suggests an alternation of scale degrees 3 and 2, here supported by motion in parallel tenths in the bass. However, the bass, rather than moving from tonic to leading-note and back, moves in *exact* parallel, descending a major second to the flattened leading-note, a♮. This produces a "false relation" with the a# of the inner part, thus creating an ambiguity with regard to the mode of the dominant harmony which is implied. This alternating pattern is extended in bars 38-44 and 93-105.

Ex.6.1(d) shows a pattern of alternation arising from motion in the bass. The bass moves from c to f, suggesting V-I in F major, while the upper parts maintain an unchanging f-b♭-d-g. While the chord over the c may be interpreted as a "dominant

eleventh", that over the f is less convincingly interpreted as a tonic, unless the upper voices are regarded as suspended. Since the latter never resolve by step, this interpretation is relatively weak. This is, therefore, an interesting example of a progression which alludes to tonal function but avoids purely triadic elements.

Example 6.2 illustrates the use of the dominant in its "leading" or cadential function. It must be said that the unambiguous use of the perfect cadence V-I in Carter's music is extremely rare, since emphatic closure is usually avoided. Ex.6.2(a) shows the end of the *Pastoral*, where an A major tonic is asserted. The effect of a dominant is dependent on the e in the viola at the bottom of the texture in bar 275, enhanced by its flattened upper neighbour f♮. In bar 276, the sense of dominant function is tenuously present as the pitches of an "e dominant seventh" are dispersed through the bar in a way which makes them marginally more prominent than the other pitches.

Ex.6.2(b) shows passages from the first movement of the Piano Sonata, a work which, unlike most other Carter, is characterized by grand cadential gestures. The passages in question are taken from the "second subject" and the approach to it (bb.78-83 and 101-102). The final beat of bar 78 moving to bar 79 gives the effect of a conventional, if extremely rapid, 3-2-1 over I-II-V-I harmony in c minor. Bars 81-82 emphasize the lower neighbour, b, harmonizing this with a G major triad (temporarily obscured by a flourish making use of a tonally unrelated form of set 4-23) before returning to c in bar 83. Midway through the course of the second subject, this cadential emphasis of c is repeated with parodic effect (bb.101-2). The bass motion g-c is "normal", but the chromatic flourish of bar 81 is greatly expanded in bar 101, forming an eleven note collection, which mocks the tonal conventionality of the bass

progression. This kind of progression, where motion through a fourth or fifth in the bass might suggest a tonal cadence, while the upper voices militate against such an interpretation or at least render it ambiguous, becomes common later in Carter's output. Ex.6.2(c) shows several instances from the first movement of the Cello Sonata[2].

Allied to the use of the dominant in the perfect cadence is its use as a "divider", a point of temporary rest or a structural interruption such as may be found at the end of the antecedent phrase of a period in tonal music. The function of the dominant in such a case is both to act as a point of arrival and to create the expectation of continuation. Example 6.3 illustrates Carter's use of the dominant in these situations. Ex.6.3(a), from the second movement of the Piano Sonata, is a variant of a standard means of dominant preparation, the augmented sixth chord. The pitch e♭ is emphasized here not only through its appearance in five octaves, but also through the "leading-note" effect of its chromatic neighbours f♭ and d♮. The factors which blur a clear tonal reading of the progression are (i) the fact that e♭ is sustained against its neighbour notes in bars 24-5 and (ii) that the voice-leading suggested by the figured bass is not completely realized and is subject to extremes of registral transfer. The emphasis on e♭ as V in a♭ minor is clearly felt nevertheless, though Carter avoids the obvious by leading us towards G♭ or C♭ in the following bars (27-29). The emphasis on e♭ as a dominant here also has the effect of strengthening the

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[2] Harvey [: 36] draws attention to the first of these (b.1), which approximates a perfect cadence in B major, also noting the "arpeggiation" of a B major triad in the bass. However, the appearance in octaves of the pitch d# may alternatively be explained as the result of an extension of the intervallic relationships presented in the first chord, 4-7. The upper dyad, a#-e#, spans a perfect fifth; adding another perfect fifth below a# produces d#. The lower dyad, f#-a, outlines a minor third, which, if added to in a similar manner also produces d#.

connection with the d of the opening bars of the movement (see Chap.4, p.81). The latter may be tentatively interpreted as scale degree $\hat{5}$ in G major, with the progression

d-c
b-a "unfolded" below it. The dominant quality of d remains only latent, since an unequivocal G triad is avoided.

Ex.6.3(b) (Cello Sonata, second movement, bars 35-44) shows a passage which hovers around the tonality of A♭ major/minor. The first two bars of the passage appear to outline, through unfolding and voice-exchange, a I-V progression in a♭ minor. The "answering phrase" initiated by the cello begins with an implied perfect cadence and changes to the major mode. The bass imitates a familiar tonal pattern, a sequence of root progression through falling thirds I-VI-IV, before being diverted back to V via V/V in bars 39-40. This interpretation is, of course, dependent on supplying "implied notes" to the otherwise sketchy voice-leading. It is more difficult to incorporate the next two bars into such a scheme. The abrupt shift of the "root" to g♭ followed by d♭ and the complex relationship of the piano right hand part to these roots in bar 41 make a tonal interpretation in A♭ major problematic, while the intrusion of e♮ and b♮ in the cello in bar 42 are positively disruptive. Nevertheless, when the g-b♭ dyad is asserted again in bars 42-3, it functions as an incomplete dominant sonority, being strongly associated with similar occurrences in bars 37 and 40.

(b) The Neighbour Note.

The neighbour note is perhaps the simplest form of melodic prolongation available in tonal music and it is therefore not surprising that it should be "borrowed"

or alluded to frequently in post-tonal music. The only problem in applying the term neighbour-note outside a tonal context is that it presupposes a hierarchic relationship in which the neighbour note is dependent upon the prolonged note. This situation does not invariably exist in post-tonal music, where both notes may be equally important members of a pitch-class set or motive.

Example 6.4 illustrates several uses of the neighbour note in Carter's earlier music (also see Ex.6.1(a) (b) and (c)). The first of these, Ex.6.4(a), is relatively straightforward; the neighbour notes may be identified as such because they do not belong to the prevailing harmony and are resolved by returning to adjacent notes which are. Set 4-26 (f-g-b♭-d) is sustained in the piano, while the g and d are arpeggiated in the vocal part and prolonged by use of the neighbour notes a and e. These notes produce an effect of greater dissonance than those surrounding them, since they form semitonal clashes with the pitches b♭ and f of the sustained harmony.

Ex.6.4(b) shows the opening of the Piano Sonata (bb.1-7), which makes complex and expressive use of the neighbour note. Several neighbour relationships are exploited here; (i) the motion from b to a# underpins the passage (this is emblematic of the tonal progress of the movement as a whole), (ii) the pitches of the first chord in bar 2 (g#-c#-e#) are initially perceived as neighbours to the implied B major harmony produced by the overtones of the five octave b, (iii) the "resolution" of this chord produces further complication, since a c♮ is introduced instead of the expected b; this has the effect of retrospectively altering the perception of the g#-c#-e# chord so that it appears the more stable sonority, while the c-d#-f# chord appears part of an incomplete dominant seventh, composed of neighbour notes to its predecessor, (iv) the introduction of d♮ in bar 3 produces a further ambiguity, since it might be

heard either as a neighbour to the c, or as an alteration of the d#, producing a modal "mixture", (v) the e# and b# in bar 5 are clearly neighbours to f# and c# in the following bar. As a whole, this passage also exhibits the "unfolding" of a non-tonal sonority, set 4-26, which may be regarded as one of the work's "key-chords". The pitches d#-f#-a#-c# are deployed in two pairs of dyads, first in minor thirds (bb.2-4), then in perfect fifths (bb.6-7).

Ex.6.4(c) demonstrates the use of neighbour notes in a context that is further removed from conventional tonality (Cello Sonata, third movement, bb.12-21 and 29-39). The pitch content of these passages is strongly influenced by the Kh(6-20) sets described in the previous chapter. These sets are deployed so as to maximize their resemblance to tonal patterns. The particular form of 6-20 used at the opening of the first passage is [d-e♭-f#/g♭-g-b♭-b/c♭], which contains major and minor triads of G, E♭ and B. Within this symmetrical set structure, the pitches d and e♭ should be regarded as having equal value. However, the prominent repetition of the pitch d makes it a point of focus, while the pitch e♭ is frequently used in a manner which mimics the conventional neighbour note, the most important difference being that the "neighbour note" e♭ is often sounded against the "prolonged note" d.

Having discussed a few instances of Carter's use of the tonic-dominant relationship and the neighbour note, we will examine a particularly characteristic feature of his style which involves the conjunction of these two phenomena (see Ex.6.5). In each of these passages, there are two tonic-dominant axes, which are separated by a semitone. In some cases, one of these axes appears to be primary, while the other stands in a "leading-note" or "Neapolitan" relation. In other cases, the four pitches appear locked together in tense symmetry. The first example, taken

from the final bars of the first movement of the Piano Sonata, encapsulates the tonal argument of the work as a whole, which hinges on the harmonic interpretation of the pitch a#/b. (see Chap.5, pp.114-5). Here, the stark juxtaposition of pitches from the tonic and dominant chords of B major against their neighbour chords F major and B♭ major makes it difficult to decide which is the true tonic axis and which the neighbour axis. The final settling on f and b♭ is only a temporary solution in the context of the work as a whole, as may be deduced from the sudden drop in dynamic and the marking *Più tranquillo.*

Examples 6.5 (b), (c) and (d) are all taken from the first movement of the Cello Sonata. David Harvey attempts to show that the movement has a unified middleground structure, in which focal pitches are "sustained" through neighbour-note and fifth relationships [Harvey: 36]. While reserving judgement on the validity of this view, we can see that at the foreground such relationships are much in evidence. Ex.6.5(b) is the least complex, being taken from a passage for solo cello. The resemblances to tonal features such as arpeggiation, octave transfer and neighbour note motion require little explanation. Ex.6.5(c) is typical of several brief sections in the large paragraph from bar 19 to bar 67; the bass, in itself, suggests the kind of axial relationship previously described, but in the context of the three-part contrapuntal texture, it is impossible to ascribe a genuine root-function to this bass line. The third of these passages, Ex.6.5(d), is the most complex in its allusion to tonal procedures (compare Ex.5.14). The pitches e and b appear frequently in the bass, which, together with the e-g dyad sustained by the cello from bar 123 until the end of the movement, suggests an e minor tonality. The use of tetrachords from the Kh(6-20) group, with their strong triadic associations, contributes to the pseudo-tonal feeling;

several of the sonorities employed might be construed as tonic or dominant chords in e minor with added neighbour notes, the pitches a# and c frequently appearing in conjunction with b. The alternative axis to e-b is d#-a#, most strongly presented across the bar line of 125-6. As in the example from the Piano Sonata, the pitch d# appears in this passage both as the third of the dominant chord and as a root in its own right, but the superimpositions of tonic and dominant and their neighbours are much more difficult to "disentangle" in the later work, and it may be reasonable to suggest that the fifth-relationships in play here are primarily the outcome of the interplay of intervals and sets rather than of tonal "progressions".

(c) Linear progression.

The concepts of linear progression in tonal and post-tonal music, while superficially similar, are fundamentally different in structural implication. In tonal music, a linear progression connects two notes which have a "genuine relationship" [Schenker, 1979: 74], which is to say that, at a deeper structural level, they may be regarded as belonging to a single harmony, which is then "unfolded" and "composed out" by means of the linear progression. Thus, the only intervals which can be composed out through linear progression are those which may form part of a triadic harmony - the third, fourth, fifth, sixth and octave. In post-tonal music, there is no *a priori* relationship between the notes which begin and end a linear motion; instead, borrowing a phrase from a description of Hindemith's music, "the voiceleading is spun out between [...] two points like the cables of a suspension bridge" [Neumeyer: 65]. Thus a linear progression at the foreground level in post-tonal music does not

necessarily have implications for deeper structural levels, although it may do so.

Linear motion is an aid to coherence in post-tonal music, since it is the most aurally obvious method of leading from point to point. This is especially true in contrapuntal music, much of Carter's being a case in point. The effect of a linear progression is often enhanced by doubling it with a parallel motion - a device much favoured by Carter - or occasionally, by combining it with a contrary motion. Linearity is such a powerfully simple constructive principle that it served Carter through the whole of the period under examination. Example 6.6 illustrates this with a few characteristic passages.

Examples 6.6(a), (b) and (c) have in common a string of parallel triadic intervals (perfect fifths or major thirds), forming long, sometimes meandering, chains of linear motion. The example from *The Rose Family* shows descending linear motion in parallel fifths in bars 22-24, which preserves a diatonic field of *D*, followed by ascending parallel triads in bars 25-6, which disorientate the sense of diatonic field. The use of parallel fifths here, in the approach to the main climax, further intensifies the importance of this interval in the song (parallel fifths have already been introduced in bars 20-21, piano right hand).

Ex.6.6(b) demonstrates a much more thoroughgoing use of parallel linear motion in thirds, fourths, fifths and complete triads, which makes up most of the middle section of *Warble for Lilac-time*. Bars 93-4 make use of an interesting variation of the voice-leading of bars 90-92; the upper pair of lines are inverted, forming a perfect fourth instead of a fifth and the order of the upper dyads is reversed. The streams of parallel motion seem to find no cadential resting place, an effect which is probably designed to reflect the words of the text; "Thou, soul, unloosened

the restlessness after I know not what;/Come, let us lag here no longer, let us be up and away!"

Ex.6.6(c) is from Carter's most extended exercise in parallel linear motion, the song *Voyage*, which sustains parallel motion in major tenths virtually throughout its 122 bars. Against this, the middle part of the piano has a tortuous line derived from a single three-note motive (reflecting the "infinite consanguinity" of the poem's opening lines), while the voice has a rhythmically freer, declamatory part. The constant motion in parallel results in a harmonic texture which resists definition in relation to a single tonic and which never resolves its tension but comes to rest on a chord combining elements of B and E♭ majors (see Chap.5, p.115). The rise and fall of the parallel lines generates the song's large-scale form. The opening paragraph (bb.1-52) is constructed in three "arches", each longer and reaching higher than the previous one; (i) bb.1-10, b-d# rising to f-a in bb.6-8 and falling back down to a-c#; (ii) bb.10-21, rising to g-b in b.20, falling to b-d#; (iii) bb.21-52, rising to a. -c in bb.28-31, falling to an alternation of a-c# and b-d# in bb.38-47 and to g-b in bb.47-49. The middle section, marked "Slightly Faster" (53-92) may be divided into two; (i) bb.53-78, where the parallel motion receives further doubling, is distorted by octave displacement and is temporarily abandoned; (ii) bb.79-92, a return to the rising pattern of the opening, which is extended so that it covers two octaves. The final section alternates b-d# and a-c# in bb.93-105, before finally subsiding towards e♭ -g in bb.113-4. This dyad is balanced against the b-d# of the opening in the brief coda.

The Piano Sonata contains many passages which exploit parallel linear motion, though never to the extreme represented by *Voyage*. Ex.6.6(d) shows a passage from the opening of the second movement, familiar from discussion of diatonic fields and

pitch-class set motives (compare Exx.4.2 and 5.10). Although the parts frequently re-align themselves and may be displaced by octave transfer, patterns of parallel octaves, perfect fifths and minor thirds are clearly audible, with the latter playing a particularly important role, as is shown in the subsidiary diagram. Examples 6.6(e) and (f) show two related passages from the first movement. In the first (163-6), an upper dyad of a perfect fifth gradually ascends through the same interval. The voice-leading below this is less consistent, but tends to create a minor sixth below the lower note of the dyad. The second passage (232-243) expands this idea, maintaining the upper perfect fifth at the beginning, but eventually dropping this and combining the topmost line with other patterns of ascent and descent and some "pedal" notes. The final two stages of this ascent - from d# to e# and from e# to f# - are more widely separated, thus bringing the question of "prolongation or association" into play. The octave f#s at the end of the progression are a strongly asserted goal, and the whole of the preceding passage may be regarded as an extended "dominant preparation".

Passages of strict parallel or contrary motion are less common in Carter's later music. Examples 6.6(g) and (h) give isolated instances from the first movement of the Cello Sonata and Part III of the First Quartet. More typical are Examples 6.6(i) and (k) (Cello Sonata, first movement and Quartet Sonata, second movement), where one predominantly linear part receives support from others which approximate a linear shape.

Another aspect of linear writing which is a highly characteristic feature of Carter's style during this period, is his use of rapid scalic figuration, often irregularly accented in order to give a sense of rhythmic freedom. Examples can be found in the outer sections of *Warble for Lilac-time*, the first movement of the Piano Sonata, the

third and fourth movements of the Cello Sonata, the second and eighth of the *Eight Etudes and a Fantasy* and in various places throughout the First Quartet and the Quartet Sonata (see Ex.6.7). The later examples avoid allegiance to particular keys or modes, mixing major and minor seconds freely. This kind of scalic writing all but disappears in Carter's later music, in which his creation of distinct intervallic vocabularies leads him away from such relatively conventional and harmonically neutral patterns.

(d) Arpeggiation.

As with linear progression, there are fundamental differences between genuine arpeggiation in tonal music and allusion to it in post-tonal music, which result from post-tonal music's lack of *a priori* elements and rules. While arpeggiation of a tonal triad can be recognized as such because understanding of the concept of a triad is a given element of tonal theory, post-tonal music has no equivalent to the triad and thus no norms for its prolongation. If the members of a non-tonal pitch-class set are presented horizontally, it is not possible to argue that this represents an "arpeggiation" if we cannot recognize this set as a vertical harmonic entity.

In post-tonal music there are, principally, two ways in which arpeggiation may be emulated. The first is by simply presenting the pitches of a tonal triad successively; in these cases, reference must be made to the harmonic context in which this "arpeggiation" appears in order to ascertain whether it may genuinely be perceived as such. The second may more accurately be described as "intervallic process", to borrow a term from Harvey [Harvey: 55]; this involves the multiple replication of a

motion through a particular interval and direction. This is, in one sense, akin to the principle of linear motion in post-tonal music; no pre-determined relationship need exist between the end points of the motion; what binds them together is the consistency of direction and size of step of the motion itself. From another perspective, intervallic process may be interpreted as the "composing-out" of a pitch-class set, which will usually have a symmetrical interval structure.

Simple examples of quasi-tonal arpeggiation can be seen in the opening solo phrases of *The Rose Family* (voice, bb.3-7) and the *Pastoral* (Viola, bb.8-12). Carter's exploitation of the rather more complex interplay between different forms of arpeggiation is shown in Example 6.8. Ex.6.8(a) is taken from *Warble for Lilac-time*, the passage beginning "The robin where he hops, bright-eyed, brown-breasted" (bb.53-56). The piano (right hand) plays on the relationship between the arpeggiation of tonal triads [0,3,7] and of forms of set 3-4 [0,1,5]. Ex.6.8(b) is taken from the closing pages of the first movement of the Piano Sonata and is characteristic of the *scorrevole* passages of the movement as a whole. This exhibits a similar interplay between [0,3,7] triads and set 3-9 [0,2,7], which appears either as two perfect fourths or perfect fifths.

Example 6.9 shows several passages in which an "intervallic process" akin to arpeggiation is used to carry out a larger scale melodic motion. At (a) (Piano Sonata, first movement), the centrality of the pitch c is established by its appearance as a bass pedal, and as the starting point and goal of the melodic lines. The principal melodic lines themselves are created from overlapping or adjacent statements of set 4-23 [0,2,5,7], as the second stave of the analysis shows. These lines are constructed so that they consist only of the intervals present in 4-23, the major second, minor third

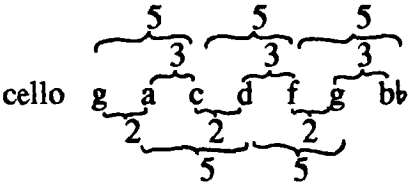
and perfect fourth or fifth. The underlying symmetry of the passage grows from the subdivision of the octave by the interval of a minor third, this interval being "prepared" by the c-e♭ dyad on which the music comes to rest in bar 80. The first phrase rises from c to a and the "answering phrase" rises from e♭ to c as the upper voice completes its octave progression, moving from a to c. This implies a symmetrical division of the octave, c-e♭-g♭-a-c, an interpretation which is supported by the shaping of the melodic lines. The structural importance of the minor third is underlined by the detail of the parallel motion in the left hand in bar 83. In Ex.6.9(b) (Cello Sonata, second movement), a similar intervallic process occurs, making use of cycles of minor thirds, this time in parallel perfect fifths.

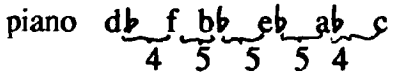
Ex.6.9(c) shows the opening of the third movement of the Cello Sonata. The opening sonority is set 4-14 [0,2,3,7], in a form which pairs interval classes 3 and 5. These two interval classes play an important role in the progression that follows. The two instruments take the outer pitches of this chord, c#/d♭ and a, as their starting points and, over the course of bars 1-4, outline a symmetrical progression, moving outward by semitone:

a——b♭
d♭——c

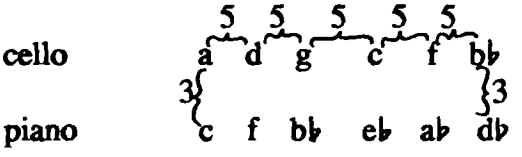
The internal structure of this progression also shows symmetry operating in different ways, with the two instruments producing contrasting patterns from similar pitch material. The cello part subdivides ic5 into ic2+ic3 in a repeating pattern, while the piano part rearranges a straightforward ic5 cycle by reversing the position of the poles d♭ and c, thus creating a symmetrical pattern of ics 4 and 5:

Table 6.1 Intervallic structure of Cello Sonata, III, bb.1-4





Rearranging the sequence of pitches, we can see that both instruments use transpositions of the same hexachord, 6-32 [0,2,4,5,7,9], which may be represented as a chain of perfect fourths separated by a minor third:



Carter's use of quasi-scalic figures in the later music of the period has its counterpart in the frequent appearance of rapidly moving chains of thirds (and occasionally fourths) in patterns which mimic the conventional arpeggio, but which avoid tonal definition. Ex. 6.10 illustrates this with passages from the Cello Sonata (second movement), First Quartet (Part III) and Quartet Sonata (first and third movements). As in the case of the scale-type figuration shown in Ex.6.7, this kind of material gives way after c.1955 to patterns whose intervallic content is more rigorously controlled.

(e) Octaves.

The aural equivalence of pitches separated by an octave, or multiples of an octave, is one of the most fundamental concepts in music, whether tonal or atonal. The practice of octave doubling in order to reinforce the prominence of a pitch or a melodic line became engrained early in the development of tonality. Its power was such that it was one of the features (along with tonal triads and minor dissonances) which Schoenberg recommended should be avoided in serial composition, in order not to privilege one note above others. The use of octave doubling is thus one of the features by which we may distinguish tonal from atonal music. "Coupling", or the structural connection of pitches an octave apart, is a closely allied phenomenon - the composing out of these octave relationships.

In "extended tonality", composers may make liberal use of octave doubling and coupling, either as a simple continuation of common tonal practice, or in order to give structural emphasis to certain pitches in the absence of clearly defined tonal hierarchies. In fact, this is one of the features which distinguishes music of Carter's early and transitional periods from that of his later period (post-1959). Examples of octave doubling from Carter's earlier music are almost too widespread to occasion comment, save that it is a particular feature of his piano writing, which exploits the instrument's potential for effects of resonance. Octave doubling becomes more notable as it becomes rarer. It is already less frequent in the Cello Sonata than in the Piano Sonata, and within the later work, the first and fourth movements (the last two to be written) contain fewer octaves than the second and third. This is partly explained by the transition during the course of the work from a primarily harmonic

conception to one which explores leaner contrapuntal textures, but it is also the result of a less emphatic reference to tonality. In the First Quartet, octave doubling, while not banished entirely, is comparatively rare, being reserved for climactic or assertive passages (e.g. part III, bb. 105-113 and bb.431-437), while in the Quartet Sonata, they are still less frequent, being used, in most cases to highlight some of the interesting timbral combinations possible within the ensemble (see first movement, bb.45-50).

A similar course may be traced through the transitional period by examining Carter's use of octave coupling. The use of "local" melodic octaves is an important feature of the musical language of the earlier works, especially the Piano Sonata (see Ex.6.11(a)). The Cello Sonata exhibits far fewer of these local octave transfers, which are confined to moments of structural emphasis (Ex.6.11(b)(c)).After the composition of this work, such use of the octave becomes as rare as its harmonic use, being confined mainly to passages which exploit changes in spacing and timbre (see Ex.6.11 (d), (e) - *Eight Etudes and a Fantasy*, no. I, and the Quartet Sonata, second movement). Other examples of the association of pitches an octave apart can be found in the First Quartet and the Quartet Sonata, but emphasis on particular pitch-classes here is transient in effect (see Ex.6.11 (f), (g)).

Carter's use of "progressions" which span an octave is a more complex issue. In Examples 6.6(c) and 6.9(a) we have already seen passages in which structurally important pitches (or harmonies) an octave apart are connected by means of consistent voice-leading techniques, whether linear progression (as in bars 79-93 of *Voyage*) or intervallic process (as in bars 83-85 of the Piano Sonata, first movement). The questions of the scale of these progressions and their harmonic content must be considered here. In Ex.6.6(c), while an "association" between the harmonies of bars

79 and 93 may be acknowledged, it is difficult to regard the intervening passage as a "prolongation" of the b-d# dyad, since the harmony wanders so far from the implied B major of this dyad and is, in any case, resistant to meaningful interpretation in terms of root progression. In Ex.6.8(a), the shorter span of the passage, the continuing presence of the pitch c and the consistency of the symmetrical division of the octave contribute to a much securer sense of prolongation, despite the chromaticism of the pitch material.

These octave progressions have an enclosed and stable harmonic character which is not typical of Carter's later music. Indeed, the most elaborate example of this kind of progression may be regarded as parodic or ironic in effect. This is the statement of the fugue subject from the second movement of the Piano Sonata (bb.103-112, see Ex.6.12). The initial presentation of this theme is a faintly comic moment, self-consciously proclaiming the beginning of a fugue with mock-academic seriousness. Its slower and stricter tempo, apparent metrical regularity and diatonic and tonal clarity contrast with the nervy fragments of the passage from which it emerges. The length of the subject is another contributory factor to its character; a two octave ascent and descent is achieved through a rather labyrinthine series of overlapping arpeggiations and descents. (In fact, this passage demonstrates the use of all the features described in this chapter; fifth-relationships, neighbour notes, linear motion and arpeggiation). The effect is compounded by the literal repetition of the whole subject as a "real answer in the dominant" in bars 112-121. However, the rhythm of the subject and its harmonic relationship with its countersubject conspire to undermine its pretended conservatism. The suggestion of hemiola and the irregular accentuation in bars 106 and 108 produce a subtly shifting sense of metre, which contradicts the

surface regularity of the 6/8 metre. In tonal terms, the subject may be analyzed along the Salzerian lines suggested in Ex.6.12, that is as an example of prolongation through means of slightly extended tonal voice-leading. However, the putative harmonic structure set out here is flatly contradicted by the combination of "answer" and "countersubject" in bars 112-121.

2. Middleground and Background.

It could be said that in Carter's transitional works there is not "a middleground", but that several middleground elements exist. These may form patterns of association having variable internal consistency and structural strength. If this is so, then the concept of a background is at even greater risk. Even for works which begin and end "in the same key", such as the *Pastoral* and *Warble for Lilac-time*, the deduction of a meaningful background is a dubious enterprise. This is so not only for the reason that the succession of tonal areas visited may be resistant to a reductive analysis, which attempts to subordinate some and privilege others, but also because the kinds of harmonic language employed may vary so much within a work, as has been shown in chapters 4 and 5. It is therefore impossible to form an impression of the "background" of a work without consideration of issues such as pitch-fields and set vocabulary, factors which are not easily represented in the conventional Schenkerian graph, which shows only harmonic and voice-leading relationships. Indeed, in some of the later works of the period, such as part III of the First Quartet and the third movement of the Quartet Sonata, it is rhythmic and metrical rather than harmonic factors which govern large-scale form. A fuller discussion of

"middlegrounds" and "backgrounds" will be reserved for the analytical chapters on complete movements which conclude this study. For the present, some important general issues will be discussed through the use of a familiar passage.

In principle, the relationships discussed at the foreground level may all play a part in the deeper structural levels. In practice, functional tonal relationships and prolongations are rare, association and allusion being more usual, and the number of different types of structural connection which can be genuinely heard is reduced. The strongest factors in determining the structural importance of pitches are generally register and metrical placement, a fact which is most clearly seen in the construction of large-scale neighbour-note and linear motions. The second movement of the Piano Sonata (bb.1-52) will once again furnish a suitable example (Ex.6.13). Previous paragraphs have discussed the relationship between the five-octave d in bar 1 and the five-octave e♭ in bar 24. The association formed through metrical placement and register is reinforced by the allusion to tonal function, both the d and the e♭ acting as quasi-dominants. The recurrence of the d-b dyad in bar 52 forms another association with the first bar and may be taken as the end point of a large-scale neighbour-note motion.

Within this paragraph, prolongation and association are both brought into play. During bars 1 to 15, the continuing presence of d in the upper voice, frequently in conjunction with its neighbour note e, may lead us to regard this pitch as being prolonged during this passage. The d in the bass, recurring in bars 3, 6 and 13, has a similar relationship with its lower neighbour c, although the much more extreme changes of register in the bass disrupt a sense of continuous prolongation. Between bars 14 and 26, the development of clearly audible linear relationships carries the ear

from the prolonged d to the e♭, thus creating a "progression" whose continuity appears logical. The first half of the paragraph (1-26) thus exhibits a strong resemblance to tonal procedures of prolongation and progression.

In the balancing section (26-52), similar methods are brought into play. E♭ persists in the bass and middle register in bars 26-32, while the diatonic orientation shifts around this pivot. Between bars 33 and 36, in the highest and middle registers, e♭ and its neighbour d♭ alternate in an ostinato in association with g♭, a pattern which suggests G♭ major, with d♭ as scale degree $\hat{5}$ and e♭ as its neighbour note. In bars 36-41, a linear progression develops in the bass, descending from e♭ to b♭♭, while the e♭/d♭ alternation continues in the upper voices.

In the remainder of the passage, stability and logical continuity are progressively disrupted as the music is made to bear greater expressive weight. The clue to this process is given in the expression marks; *molto intensamente* in bars 42-3 leads to *precipitoso* in bar 48 and *rubato* in bar 49. Rhythmic values decrease from quavers to triplets in bars 45-6 and semiquavers in bars 48-51, while the underlying pulse is disrupted, the crotchet motion of bar 47 giving way to dotted quavers and quavers in bars 48-9, syncopation in bar 50 and irregular grouping in bar 51. These metrical and rhythmic disruptions are matched by the disintegration of linear logic. The linear motion in the bass of bars 36-41 is continued, but is subjected to displacements of rhythm and register. Having arrived at b♭♭ in bar 41, this pitch is re-spelled as a♮ and persists from bar 42 to 44. From this point, the descent continues, moving through g in bar 45, f# in bars 46-7, f in bar 48, e in bar 49, e♭ in bar 50 and d in bar 52. However, the audibility of this "progression" is challenged by the gradual loss, beginning in bar 46, of the distinctive rhythmic profile of this idea

and the transfer of the f, e and e♭ to a higher octave. If the bass "line" offers a thread of continuity, the upper voices militate against this, with apparent arpeggiations giving way to semitonal motions, some of which are displaced through octave transfer, the last of these semitonal motions being e♭-d across the bar line of 51-52. Thus the continuity of the middleground "progression" from e♭ to d in the upper voice is lost and is only recaptured by the allusion to it in the final detail of the foreground of the passage. Bars 26-52 thus represent a mixture of prolongational and associational elements. The linear motion in the bass might be interpreted as an octave transfer of the pitch e♭ and thus suggest the prolongation of this pitch throughout the passage, but the absence of such a continuity in the other voices means that we can only infer an association. Perhaps what is most characteristic of Carter's style in this passage is the dynamic relationship which exists between principles of prolongation and association; our expectations of one mode of continuity are challenged by his resort to another.

CHAPTER 7: THEMES, MOTIVES, ROWS.

1. Introduction

The variable relationships which exist between keys and fields and between chords and sets have parallels in Carter's approach to thematic material. One might speak of a transition to "athematicism" corresponding with that to "atonality", but the term "athematic", originally an abusive expression[1], is of dubious usefulness, suggesting as it does the absence of meaningful content. The question of what could or could not be "thematic" in music underwent intense scrutiny in the early years of the century in the works of the Second Viennese School and their contemporaries, leaving their successors a much wider array of possibilities than they themselves had inherited. It would, therefore, be more accurate to state that Carter's view of what might constitute thematic material underwent considerable changes during the transitional period. Identification and analysis of thematic material is inextricably linked with consideration of its treatment and, therefore, with issues relating to musical form. Thus, although the focus of this chapter will be on content, it is inescapable that much of it will be devoted to Carter's approach to form, and hence it will (together with the later parts of Chapter 6) mediate between the consideration of small-scale features in Part 2 and the analyses of complete movements in Part 3.

Carter's approach to thematicism is multi-faceted. On one hand, we may see patterns of statement, repetition and variation, which have their origin in nineteenth century music. On the other, there are movements built primarily from processes of

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[1] See [Samson 1993: 185]

continual transformation which are more akin to the experimental "stream of consciousness" prose of Joyce or the Surrealists. Passages of literal or transposed recapitulation are occasionally encountered, as are transformative or synthesizing passages, which attempt to demonstrate or "explain" thematic resemblances, and passages in which an idea previously only tentatively proffered is allowed to blossom and dominate. (Schiff calls these "epiphanies", borrowing Joyce's term [Schiff 1983: 37-8].) Melodic lines which unfold in a seemingly spontaneous, unstructured manner coexist with quasi-serial passages whose pitch-sequences exactly reproduce those heard elsewhere in the work. Passages of apparently neutral thematic significance may be found, where rhythm or texture are the focus of interest; in certain extreme cases (the third and seventh of the *Eight Etudes and a Fantasy*), the musical material is pared down to a single chord or note so that *Klangfarbenmelodie* is the focus of the piece. There are "themes", "motives", "tone-rows" and - perhaps the most forward-looking aspect of all in the context of Carter's later development- passages where individual intervals appear to take on thematic significance[2] .

The context in which this multiplicity was engendered was shaped by the work of earlier twentieth-century composers, particularly Schoenberg. "Theme" is as much an aesthetic concept as a technical one, so consideration of it ought to begin with a brief examination of what it meant to Carter's forebears. Schoenberg sought to make his music "thematic" through and through in the sense that to be "thematic" is to carry

[2] See Whittall's reference to "interval-class thematicism" in Carter's later works [Whittall, 1987]

expressive meaning[3]. As Dahlhaus notes, "in Schoenberg, the terms 'theme', 'basic shape' and 'idea' tend to overlap" [Dahlhaus 1987: 128], and are impossible to define rigidly, since, in the composer's writings, the significance of these categories extend "from the initial motif of a movement, through the method of mediating between the various shapes, to the form as a whole" [: 129]. The imprecision of this terminology is, in Dahlhaus's view, inevitable, given the great variety of compositional contexts in which it is put to use. He does, however, give in passing a useful summary of the possible interpretations of the term "basic shape":

> [Its] meaning can vary between an actual theme defined in all its parameters, an abstract interval structure and a still more abstract basic pattern reaching back behind the intervals to mere outline and expression. [: 132]

Furthermore, Dahlhaus clarifies the fact that probably the most significant of these meanings for Schoenberg was the intervals or complexes of intervals, which provided the "true substance" or "content" of the music [: 130-131]. What is clear, is that in analyses of the works he most admired (his own as well as those of his predecessors[4]) and in composition, Schoenberg was driven to demonstrate the operation of "musical

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[3] This interpretation relies on Dahlhaus's reading of the Wagnerian concept of "unending melody" and Schoenberg's concept of "musical prose", as expressed in his essays "Issues in Composition" [Dahlhaus 1980: 40-78] and "The Obbligato Recitative" [Dahlhaus 1987: 144-148]. To summarize, Dahlhaus defines Wagner's use of the term "melody" as indicating that which is musically eloquent and meaningful, as opposed to formulaic and inexpressive, in other words, that which is thematic, rather than non-thematic. "Unending melody" is thus music which maintains an unbroken communicative purpose through the continual deployment of recognizable motives. Schoenberg's own interest in "musical prose", in which asymmetrical phrasing arises from the excision or elision of the repetitions and "padding" normally employed to create symmetrical phrases, is clearly descended from Wagner's theory and practice.

[4] See, for example, the analyses of his own works in "Composition with Twelve Tones" [Schoenberg 1975: 214-245] and of music by Brahms in "Brahms the Progressive" [: 429-441].

logic" which derived all material from an underlying basic shape through the process of "developing variation". Put at its most direct:

> Whatever happens in a piece of music is nothing but the endless reshaping of a basic shape. Or in other words, there is nothing in a piece of music but what comes from the theme, springs from it and can be traced back to it; to put it still more severely, nothing but the theme itself. [Schoenberg 1975: 290]

The technical consequences of this view were of paramount importance for the development of modern music. In his desire to pursue the Brahmsian principle of motivic unity and the Wagnerian one of "unending melody" to their logical conclusions, Schoenberg, in his Expressionist works, created a musical style in which redundant repetitions and cadential and linking passages were banished, and even "accompaniments" were thematic. An extreme point in this idiom is the fifth of the Opus 16 Pieces for Orchestra, *Das Obligate Rezitativ* (1909), in which a single melodic line and its accompanying counterpoints are generated from ever-evolving motivic shapes without recapitulation or interruption. The development of serialism, which Schoenberg felt to be the logical outcome of this tendency, guaranteed underlying unity through the continuous presence of the "genetic fingerprint" of the series, while enabling the creation of a satisfactory degree of surface variety.[5]

The approach of the mature Carter to musical form and content would be unthinkable without the example of the Expressionist music of Schoenberg and his pupils. There are three fundamental ways in which this influence can be seen in

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[5] Paradoxically, however, Schoenberg's "discovery" of the serial principle after 1912 coincided with his decision to recover and recreate the earlier formal principles of thematic statement, development and restatement, especially as manifested in sonata form, an aim which, in retrospect, aligns him with the neoclassical tendency in European music. Thus, the works of the inter-war years display a complex interaction between traditional and modern approaches to thematicism.

Carter's music; (i) in the practice of creating a pre-compositional resource (be it a tone-row or a vocabulary of chords and/or rhythms), from which thematic material can be drawn during actual composition; (ii) in the desire to make all parts of the musical fabric continuously "thematic" in the aesthetic sense of "significant" and the technical sense of "derived from a common source", which is manifested in Carter's marked preference for polyphonic textures in which all parts employ thoroughgoing motivic or intervallic working; (iii) in the treatment of thematic material as a fluid substance, subject to continuous change and relying more on "developing variation" than on literal repetition.

However, as has already been noted in Chapter 2, Carter's development towards this "neo-Expressionist" outlook was a matter of re-discovering his earlier musical preoccupations after a period of self-imposed subjection to the aesthetic of neoclassicism. In its most transparent guise, the neoclassical style involved a return, at least on the surface, to traditional manners of thematic presentation (for example, division of texture into "tune and accompaniment") and formal differentiation (for example, structural division into "themes", "bridge-passages", "episodes" etc.). In other words, it involved a recreation of the traditional distinction between the characters and functions of "thematic" and "non-thematic" music. Although rarely employing such obvious methods, Carter's works of the early 1940s lean rather more towards this mode of articulation than do his later works. The first movement of the Piano Sonata has a close relationship with sonata form, while many other works employ variants of ternary or rondo structure and are to some extent comprehensible in terms of the structural functions mentioned above.

A further important issue to consider is the gradual weakening of the semantic

bond which makes "theme" synonymous with "melody". In tonal music, according to a leading figure in the cognitive psychology of music,

> Melody...represents the level of the greatest differentiation..., the level at which our evaluative and critical faculties are most immediately engaged. It is the aspect of music which is nearest to the 'surface', and that which, for most listeners, most immediately characterizes the music. [Sloboda: 52]

This statement may be used to support Dahlhaus's theory that, in an effort to make their music more explicitly communicative, nineteenth-century composers made the melodic dimension the principal carrier of expression. "Theme" thus usurped tonality as the determining factor of musical form. [Dahlhaus 1980: 78] Furthermore, as the function of harmony in post-Wagnerian music tended towards increasingly enhanced expressive power at the local level, it became divorced from its former bond with melody and became motivic in its own right[6]. Melody no longer contained inherent tonal implications. Instead, ever more elaborate and sophisticated harmonies could be created from the contrapuntal combination of melodic motives[7], while these harmonies in turn could be "arpeggiated" into melodic forms. This situation gave rise to the Schoenbergian concept of the motive, which could appear, and carry meaning, both vertically and horizontally. The thematic function of "key-chords" in Carter's music will already be apparent from discussion in Chapter 5, and this function is particularly clear when the harmony is associated with a specific register, spacing and instrumental scoring. The use of individual harmonic intervals as thematic entities, a common feature in Carter's later music, is also occasionally

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[6] Dahlhaus cites the Wagnerian leitmotif of "Day" in *Tristan* and the "Mystic Chord" *Parsifal.* [Dahlhaus 1980: 78]

[7] Dahlhaus gives the "Tristan" chord as an example of a harmony created through the interaction of the melodic motives of "yearning" and "suffering". [Dahlhaus 1979: 61]

anticipated, for example in the prominence of the minor third in many passages in the Piano Sonata (see Chap.8).

As well as this harmonic dimension to thematicism, the early part of the twentieth century also saw the occasional elevation to thematic status of other musical features, particularly rhythm and texture. Rhythm may be seen to have an enhanced function in works by Stravinsky, such as *Le Sacre du Printemps* (1913) and *Les Noces* (1914-17), as well as acting in a motivic fashion (as *Hauptrhythmus*) in many works by Berg, but it is really in the output of Carter's experimental American predecessors that it takes on a primary constructive and thematic role, the most obvious examples of this being works written for percussion ensemble, such as Cage's *First Construction in Metal* (1939). The enterprise of "total serialism" in the post-war period represents another step in the attempt to equalize the importance of all musical "parameters", the domain of rhythm being treated as a repertoire of durational values (see Babbitt's *Three Compositions for Piano* (1948), Messiaen's *Mode de valeurs et d'intensités* (1949) and Boulez's *Structures Ia* (1952)). Carter eschews this serial approach but uses rhythm thematically and systematically in the sense that distinctive rhythmic features may be assigned to different parts of the musical texture. These features may be specific metronomic pulses, particular polyrhythmic combinations or other ways of behaving, such as acceleration and deceleration [Schiff 1983: 24-34].

The importance of texture in post-tonal music can hardly be overestimated. Between the extreme pointillism of Cage's *Music of Changes* (1951) and the vast, dense clusters of Ligeti's *Atmospheres* (1961), not to mention the huge array of electronically produced or modified sounds, a range of textural possibilities has been opened up in the twentieth century which defies description. Carter's mature works

make wide and dramatic use of these possibilities. (See, for example, the *Concerto for Orchestra* or *A Symphony of Three Orchestras.*) However, along with this explosion of resources came a desire to promote texture to the level of a form-bearing medium. Debussy is generally credited with taking the first steps in this direction in works such as the sets of *Estampes* (1903) and *Images* for Piano (1905, 1907-8) and Orchestra (1906-11), in which the distinctive instrumental colours employed are at least as important as the melody and harmony they are associated with. Schoenberg's well-known prophecy (made in 1911 in his *Harmonielehre*) of a *Klangfarbenmelodie* with a logic of its own [Schoenberg 1978: 421-2], is another example of early recognition of the formal and thematic potential of timbre and texture. The third of his Op.16 orchestral pieces, *Farben*, served as a model for many later composers in its drastic reduction of melodic, harmonic and rhythmic material, which enables the ear to focus on nuances of tone-colour. Carter's sensitivity to the potential of timbre and texture is clear from his writings [see Edwards: 67-76, 98-103], and from his compositions from the Piano Sonata onwards, though it is equally clear that he regards texture as one element among the many that contribute to the unfolding of musical form:

> I find that I am rapidly bored with music that is entirely "textural" in its construction [...] The "textural" effect by itself ceases to be surprising after the first hearing, because it is immediately clear that it does not contribute to any but a very primitive and simple-minded point-to-point continuity of sound moments...[Edwards: 76] What began to interest me was the possibility of a texture in which, say, massive vertical sounds would be entirely composed of simultaneous elements having a direct and individual horizontal relation to the whole progress or history of the piece [: 100]

In the discussion that follows, the terms "exposition", "development" and "recapitulation" are used to map out the issues involved in examining thematicism.

However, the invocation of this traditional vocabulary is intended to suggest starting points rather than to dictate a traditional approach to the subject.

2. Exposition

Paradoxically, given its status as the initiator of the thematic process, this is perhaps the most intractable area to investigate. Implicit in a discussion of techniques of thematic exposition is the assumption that it is possible to discuss a theme as an entity, separately from its manner of presentation, and yet our recognition of the theme depends upon this presentation. Thematic exposition in the "Common Practice" period depends upon making the theme distinct from its surrounding context (a) by differentiating it from the accompanying texture and (b) by creating a degree of structural closure and separation from preceding and/or succeeding material. Thus one expects a degree of melodic continuity in a "theme", coupled with a clear sense of metrically organized phrasing and a harmonic structure articulated through cadences. All of these features came under attack during the Romantic and early Modern periods; continuity became more fragmentary, melodic and harmonic closure was rendered ambiguous, leaving thematic statements open ended, and "quadratic phrasing" was abandoned in favour of "musical prose". To adopt Schoenberg's terminology, the *forms* of presentation of a musical idea - the "period" [Schoenberg 1970: 25] and "sentence" [: 20] - were broken down, leaving the *content* - the "motives" [: 8-9] - to be presented in an apparently direct way, ungoverned by any previously existing notions of balance and symmetry. Even more radically, the nature of the content might actually change: Schoenberg's motive, a "rhythmicized succession of notes" [:

9], could thus be replaced by a more abstract idea, a pitch-cell or a timbral combination for example, thus making constructs such as the sentence and period redundant, based as they are upon outmoded concepts of phrase rhythm and tonal harmony.

The examples which follow demonstrate the variety of Carter's approaches to thematic exposition, from the relatively conservative to the relatively radical. Carter tends to avoid obvious repetitions, sequences and symmetries, even in his neoclassical phase. However, a number of thematic presentations occurring in earlier works reveal the vestiges of traditional methods of phrase-construction.

(a) *The Rose Family*, bb.3-15

The opening vocal melody of *The Rose Family* (Ex.7.1) approaches the sentence type of thematic construction, in that the opening two-bar phrase - marked "a" - is immediately repeated, and then subjected to development, which alters some aspects of its pitch and rhythmic content while maintaining its basic contours. The underlying sequential nature of this development can be seen in the line of pitches traced by taking the downbeats of each phrase from bar 8 onwards (e♭ -d♭ -c♭ -b♭♭). As this sequence proceeds, it accelerates, condensing the phrase lengths in the manner described by Schoenberg as "liquidation"[: 58], leading to a climax produced by extending the initial arpeggio motive ("x"). The final drop of an octave, being unrelated motivically to the rest of the passage, may be regarded as the "melodic residue" [: 63].

(b) Piano Sonata, second movement, bb.1-26

The regularity of metre and simplicity of motivic content and treatment in the foregoing example, while not entirely typical, provide a useful model for examining more complex thematic statements, for example, those at the beginning of each movement of the Piano Sonata. The second movement (see Ex.7.2) begins with a paragraph of twenty-six bars which may be regarded as an extended sentence-type structure. The analysis of the passage breaks it down into three broad sections, the first (b.1-15) basically expository, the second (bb.16-20) developmental, being characterized by an overall ascent and dynamic crescendo, and the climactic final section, which consists of a severely distorted version of the opening material, followed by a falling octave "residue" reminiscent of the previous example.

Within this macro-structure, the phrase structure is rather more complex. Three basic phrase types are identified, α, β and γ. α is the most clearly defined of the three, consisting as it does of a metrically regular repetition of a simple combination of motives. However, after its initial appearance, which creates the expectation of continued regularity, it plays no further part until the very end, where the resumption of this regularity is a clear indicator of closure. Phrase types β and γ are much more fluid and unstable, in terms of metre, length and motivic content. The basic contour of the first β phrase is clearly repeated in bars 13-15 at the end of the expository section, thus giving these bars the function of a mini-recapitulation. The intervening phrases, however, subject this shape to considerable transformation. Phrase $\beta 2$ maintains the overall fall and rise, but the length of the phrase is extended from 9 to 12 crotchets and the pitch content is more varied as new transpositions of

motives (c), (d) and (e) are combined. By ending as it began, with the rising major second of motive (c), it suggests instability and invites continuation. Phrase $\beta 3$ is drastically condensed and more urgent, being essentially a reworking of the pitches of the right hand part in the last two bars of phrase $\beta 2$. The shedding of motive (d), which had begun the previous phrases, gives phrase $\beta 2$ a rising overall contour, thus making it the most distantly related to the original phrase $\beta 1$.

The γ phrases introduce new motives (the rising major third (g) and the falling perfect fifth (h)), making them significantly different from the α and β phrases, although they continue to make use of recognizable motives from these phrases. The evolutionary nature of this part of the passage may be seen from the radical transformation of the motivic elements of $\gamma 1$ in $\gamma 2$. In effect, the continuity of texture (an homogenous four-voiced polyphony), of pitch (the prominent b and f#) and of the process of shift of diatonic field extending through $\gamma 1$ and $\gamma 2$ are as important, if not more so, than the motivic content in linking these two phrases.

The climax of the passage in bars 21-26 is a good example of Carter's ability to suggest formal balance through the recall of motivic elements without compromising the dynamic, developmental nature of his style through redundant recapitulations. The overall contour of $\beta 5$ clearly relates the phrase to its predecessors, but the individual motivic components have undergone intervallic distortions; (c) has shrunk from a major to a minor second, and (e) has changed from a falling major sixth and rising perfect fifth to a falling minor seventh and rising perfect fourth. In summary, while clearly-defined formal divisions and functions can be discerned within this thematic statement, the tendency in Carter's themes towards evolutionary growth and transformation rather than symmetrical balance tends to blur this articulated structure

into one continuous process of change. Two more examples will demonstrate more complex and radical manifestations of this tendency.

(c) Piano Sonata, first movement, bb.1-32

The opening of the first movement of the Piano Sonata (see Ex.7.3) presents a dense complex of motives, some of which are identified primarily by texture and rhythm rather than pitch. Attempts to create a phrase structure based on balanced repetitions are eventually swept away by a stream of continual transformations. The motivic relationships themselves are worth commenting on; although one of the obvious characteristics of the passage is the number of different types of thematic material it encompasses, the variety of connections and transformations between them are remarkable. The principal motivic ideas are (a) the rising octave first heard in the bass (and indeed the actual harmonic sonority of the octave), (b) the rising semitone, (c) the pattern of rising perfect fourths or fifths, (d) the falling major second and (e) the rhythm ♪ ♩. which links motives (a) and (d). In addition, there are two other more complex ideas which are labelled (x) and (y). (x) is the composite motive created by combining motive (b) with the inversion of (a) in the upper melodic line of bars 2-4, and (y) the motive appearing in the bass in bars 20-22, which is adumbrated throughout the preceding passage, being derived from motive (c) through its initial rising perfect fourth and semiquaver anacrusis.

These materials are initially presented in such a way as to suggest the opening of a Schoenbergian sentence; there is a "tonic form" of a phrase, $\alpha 1$, which consists essentially of motives (a) and (x), followed by what resembles a "dominant form",

$\alpha 2$. Processes of transformation are already at work in the second phrase; motive (a) is drastically condensed to create the rhythmic profile (e), motive (x) appears in rhythmic diminution and a balancing statement of motive (c), which seemed to appear almost parenthetically in $\alpha 1$, is missing.

The phrases labelled β, which follow, are characterized by the use of motive (c) at the beginning and the prominent use of motive (d), particularly in conjunction with the rhythm of (e). The first, $\beta 1$, employs a greatly augmented version of motive (c), making it more akin to the expressive style of the phrase immediately preceding it. $\beta 2$ is basically a condensation of $\beta 1$, returning motive (c) to its scurrying semiquaver pace and giving more emphasis to motive (d) through the stark octave scoring. However, the third of these phrases, $\beta 3$, embarks on a completely unexpected development, using the semiquaver motion of motive (c) to extend the phrase into a welter of rapidly mutating variants of the motives presented so far. Thus, motive (c), which had initially appeared almost ornamental, has become a much more dynamic force. The rapid melodic ascent in bars 14-15 is followed by a more gradual descent over the next four bars, abruptly truncated by an accented chord and a sudden simplification of the texture, allowing a statement of motive (y) to be heard clearly in the bass. The process of liquidation of motives arising from the development of (c) is thus interrupted by the forceful presentation of yet another important theme. This itself is then liquidated into the dyad a#-c#.

The continuation further compounds the complexity of thematic relationships. There is a return to the *maestoso* tempo and another variant of phrase α, suggesting that a further paragraph, balancing bars 1-13, is about to begin. However, this appearance of the *maestoso* is much condensed and is still penetrated by additional

developments of the *scorrevole* ideas. In phrase $\alpha 3$ the contour of motive (x) is altered to emphasize the dyad a#-c#, thus forming a link with the end of the previous passage. There is also a "codetta" to the phrase in bars 27-29 which attempts to integrate the florid *scorrevole* development of motive (c) with the *maestoso* motives (d) and (x). In bar 30, another α phrase begins, with motives (a) and (x) presented simultaneously. This time, however, the notes of motive (x) are drawn out and made to combine harmonically; note also the reappearance of the melodic semitone (b) in the left hand part in bars 30-31. This phrase has an ambiguous effect; the rhythmic augmentation suggesting closure, while the harmonic density and dissonance suggests the need for resolution. The answer comes in the form of an interruption again, with the *scorrevole* rhythm and texture presented in a starker, clearer form than in bars 15-19, this leading into the main body of the movement. The balance between the relative importance of the *maestoso* and *scorrevole* material has thus been completely reversed.

The key ideas this crucial passage are the variety and fluidity of thematic material and the ambiguity of phrase structure used to present it. In the following example, the thematic material is even more volatile, so that it is virtually impossible to speak of a "phrase structure" at all.

(d) Quartet Sonata, second movement, bb.69-99

The opening of the Quartet Sonata's second movement (see Ex.7.4) is an intriguing study in modes of continuity and discontinuity. No two phrases are entirely alike in terms of thematic material, texture, length or rhythmic character, thus giving

the passage an almost improvisatory character. The thematic material varies from the rhythmic and timbral inflection of a single pitch to long sequences of pitches, while the texture grows progressively more complex from the single note to polyphony and the rhythmic character proceeds from the virtually ametric to regular pulses.

An attempt has been made to label the phrases in the manner used in the previous examples, but as the motivic material proliferates - especially after the fourth phrase - it becomes almost meaningless to try and differentiate degrees of similarity and difference between the phrases; each one is a new beginning. Indeed, the choice of end-point for the extract is almost arbitrary, since the process of thematic mutation continues throughout the movement.

The movement begins in a manner similar to no. VII of the *Eight Etudes and a Fantasy*, with a passage of *Klangfarbenmelodie* on the note g. The dynamic swell in the flute part in the first bar may be regarded not merely as a "colouring" effect but as a symbol or generator of the dynamic tension of the whole passage, and indeed the whole movement. The syncopated rhythmic pattern of attacks in the following bar (♩ 𝅗𝅥.) created by the entries of the oboe and cello becomes a motive in its own right when it is taken up and extended by the harpsichord in the next bar. The registration of the harpsichord further reinforces this motivic significance, with the "more intense" manual II taking over the oboe's role, while the "more relaxed" manual I emulates the fragile sound of the cello harmonic. This combination of ideas, namely the sequence of timbres - flute, oboe, cello harmonic - and the syncopation, recurs in bars 81-82. As well as creating a thematic motive, the idea of *Klangfarbenmelodie* suggests the basic formal processes of the passage, which are, on the one hand, the passing of ideas between instruments, and on the other, the splitting

of the ensemble into fragments, just as the opening note is split into different timbres. This can be seen on the small scale in bars 72-3, where the new motive of the rising semitone in the harpsichord is echoed by oboe and flute, with successive notes actually being played by different instruments. On the larger scale, a process of drawing apart into two groups can be observed, as the statements of the harpsichord and the remaining trio become increasingly independent of one another from bar 75 onward.

The process of thematic transformation begins almost at once; the single sustained note in bar 69 is turned into a repeated note in the next two bars and then into a rising semitone in bars 71-72, the latter motive retaining the syncopated rhythm of the previous bars. A rising minor third is then appended to the rising semitone (see flute and oboe, bb.72-73) to form a three note motive. The notes of this motive are subjected to rhythmic variation and permutation of their order in bars 74-76 in the right hand of the harpsichord part and the oboe and cello. At the same time, in transposed form and in triplet crotchet rhythm, it forms the basis of the left hand part of the harpsichord in bar 74. The latter is inverted in bars 76-77, and this inverted form of the motive is subjected to rhythmic augmentation into minims in the oboe part in bars 78-80. Meanwhile, the rising minor third, initially an "appendage", begins to take on an independent existence. It is used in inversion to create a new melodic shape in the oboe in bar 75 and the pattern of two descending minor thirds (c#-a#-g), formed as the oboe passes the line to the cello, is then rhythmically augmented and "stretched" in the right hand of the harpsichord (c#-a#-e#) in bars 76-78. The last interval of the latter phrase is stretched further as it is echoed in the left hand part in bars 77-78 (d#-g#). The melodic pitches at the end of this last harpsichord passage are then transformed into a harmony, with small changes of register and chromatic

alteration of one pitch, as the other instruments re-enter in bar 78.

Further transformations of the minor third motive many be seen from bar 80 onwards. The flute has two ascending minor thirds in bars 80-81, inverting and augmenting the pattern of bars 75-76. In bar 82 a significant new motive is heard in the oboe, consisting of a rising minor third followed by a rising major seventh, the rhythm of three equal quavers being derived from the harpsichord and flute motives of bar 75. This motive is then developed in the right hand of the harpsichord part in bars 83-86, at first in crotchet rhythm and then in syncopated minims, before being taken up by the oboe again in bar 86, after which point it is loosely imitated by the other instruments, its rhythm being reduced to semiquavers and the size of its constituent intervals again being altered. At the end of bar 88, the minor third (in particular the pitches e and g, which have been prominent at the beginning of each phrase since bar 80) appears as an harmonic interval. Again, this is subjected to a brief *Klangfarbenmelodie* treatment, as it passes from flute and oboe, to double-stopped cello and then becomes the uppermost interval of the dense chordal flourish of the harpsichord's new *marcato, maestoso* motive.

The obvious conclusion to be drawn from the above narrative is that the process being described is a continual evolutionary development, in which thematic material never arrives at a "definitive" form but is always in a state of becoming something new. Traditional methods of exposition (particularly the Schoenbergian sentence) usually include developmental elements, but they play a subordinate role to the establishment of definitive forms of the principal themes. It is therefore clear that we have crossed the boundary into the next category to be addressed in this chapter.

3. Development

Carter's ingenuity in the matter of thematic transformation and "disguise" is one of the most fascinating aspects of the transitional music. Apart from the traditional devices of transposition, inversion and rhythmic augmentation and diminution, Carter developed a significant number of other techniques, including intervallic alteration, polyrhythmic combination and changes of speed.

(a) Interval expansion and contraction.

This technique involves retaining the rhythmic outline and basic melodic contour of a motive, while altering the actual size of the melodic intervals used, and is a relatively traditional idea, related to Schoenberg's concept of developing variation. An interesting feature of interval alteration is the effect it has upon the pc set structure of motives. Numerous examples can be found throughout the transitional period, with the first String Quartet containing the most thoroughgoing exploitation of this technique. Both movements of the Piano Sonata, the second and fourth of the Cello Sonata, Part III of the String Quartet and the first movement of the Quartet Sonata will provide examples.

(i) Piano Sonata, first movement

The principal melodic idea of the "second subject" in this movement (bb.83-4) is dominated by the intervals of the major second and perfect fourth, emphasizing its

diatonic nature. As the theme progresses, it is developed through the alteration of these characteristic intervals, coupled with rhythmic changes; the major seconds contract to semitones and the perfect fourths to major thirds in bars 85-6 and 87-8 (see Ex.7.5). This produces a more angular and chromatic profile than the original. In both of the subsequent reappearances of this idea, its intervals are subjected to similar alterations. Bars 156-60 reproduce the pattern of bars 84-5, which starts with the original form of the phrase and continues with the altered version, producing an increase in tension. At the climax of the development section, there is a further recollection of this idea (bb.205-13) in condensed form and subjected to extreme rhythmic distortion as the texture fragments.

(ii) Piano Sonata, second movement

Example 7.6 illustrates various forms of interval alteration from the second movement of the Piano Sonata. Ex.7.6(a) shows the generation of the fugue subject from the fragmentary motives of the *misterioso* passage (bb.76-103). This is a relatively straightforward example; the opening interval of a rising minor third (b.76), which has been prominent in the preceding section (see bb.70-73), becomes a perfect fifth when the fugue subject itself is announced.

In Ex.7.6(b), the effect of increased harmonic tension is similar to that in the first movement. The example compares the melodic motive of bars 1-2 with its altered forms in bars 362-3 and 381-2. In the original form, the two falling minor thirds are separated by a major second, forming a diatonic set, 4-10. In bars 362-3, the major second contracts to a semitone so that the set formed is the non-diatonic 4-3.

This alteration not only produces the harsher dissonance of a minor ninth, but the semitones between b and a# and between d and c# create a leading-note effect which suggests b as a tonal centre, conflicting with the g or d of the opening. In 381-2, the level of dissonance introduced in 362-3 is maintained and developed. The pattern of falling intervals is complicated by the tonal disjunction between the bass and upper voices; the g♮ in the bass conflicts with the f# in the upper voice in bar 381 so that these form intervals of a major and a minor third with the d#. The following bar presents a major third and perfect fourth. This alteration produces an effect of tonicizing the note f#.

Ex.7.6(c) illustrates the varied career of the phrase that immediately follows the one just discussed (bb.3-5). Towards the end of the first paragraph of the movement, this idea is "stretched" both intervallically and rhythmically, so that the resemblance of bars 21-3 to bars 3-5 is less obvious. Later in the movement (from b.362), this phrase is subjected to a variety of transformations as it is used to link the work's main melodic motives and passes through various harmonic contexts.

(iii) Cello Sonata, second and fourth movements

Example 7.7 illustrates the various shapes taken by the motive first heard in bars 61-3 of the second movement. The opening falling and rising semitone is maintained, but the falling minor third is expanded to a major third or augmented fourth, or is inverted. The motive itself may be extended sequentially or, in bars 204-7, may be used in contrapuntal combination with itself in altered forms.

Example 7.8 shows a brief passage of motivic development in the fourth

movement. Here, both intervals and rhythmic values are augmented, while the concluding rising semitone of the motive remains unchanged.

(iv) First String Quartet, Part III

Interval expansion becomes particularly important towards the end of this work, where various thematic ideas are drawn together to prepare for the cyclic return of the opening material (see Exx.7.9 and 7.10). At bar 463, the first violin has a faster version of the theme first heard at bar 281. The rhythm of this new version recalls that of the "Threes and Twos"[8] idea (see first violin, bb.13-16). The viola then expands the intervals of this idea from seconds and thirds to fifths (b.465), from which the next step is to transform the idea into the theme first fully stated in bars 431-6. In bars 469-72, the cello phrase is related to the preceding material by the final interval, a rising minor third. Example 7.10 shows how the two halves of this phrase are isolated and their intervals expanded before the original cello phrase is shown to be an intervallic contraction of the phrase which opened the work (see viola, b.481 and violin I, b.483).

(v) Quartet Sonata, first movement

Example 7.11 shows some of the many transformations of the wedge-shaped gesture which begins the movement in the harpsichord part and which dominates the opening paragraph. As can be seen, the degree of variation in pitch is quite wide, the

[8] Schiff's term [Schiff 1983: 161]

contour and rhythmic features being the factors which maintain the identity of the motive.

(b) Polyrhythmic combination.

Carter's technique of polyrhythm has been discussed thoroughly elsewhere [Bernard 1988]. During the transitional period, he experimented with a particular variation of this, deriving from Joseph Schillinger's theory of rhythmic "interference patterns"[9]. Independent melodic lines moving in simple pulse ratios such as 2:3 or 3:5 are played within the same pitch range, producing a composite rhythmic and melodic contour. The First Quartet, Part III and Quartet Sonata, third movement both exploit this device.

(i) First String Quartet, Part III

Carter uses polyrhythmic combination in this work to transform one idea into another or to suggest thematic relationships. Much play is made from the combination of melodic lines moving in the pulse ratios 3:5, 4:5 and 3:4:5. The composite melodic contours formed from these combinations occur elsewhere as single melodic lines; thus one thematic idea may be shown to be the result of a "cross-fertilization" of two or three others. Some of the most important instances of this technique are shown in Example 7.12. At bar 82, the violins combine in the pulse

[9] See Joseph Schillinger, *The Schillinger System of Musical Composition* (New York: Carl Fisher, 1946), Carter, "Fallacy of the Mechanistic Approach [The Schillinger System]", *Modern Music* 25,3 (Summer 1946) and *CEL*: 15-16 and [Harvey: 27].

ratio 5:3, the second violin having a variant of the "Turn" idea (which plays a part in most of these polyrhythmic combinations) and the first violin another recurrent motive. The composite contour produced forms part of the "Gigue" idea, heard as a single melodic line in the first violin in bars 78-80 and in the viola in 248-9. At bar 205, the violins combine again, now in the ratio 4:5. Each has a line of rising thirds, derived from previously heard material (see violin I, b.141, cello b.190 etc.). The composite contour is the "Five against Four" idea as it appears in bar 181-4 (violin I). The full combination of 3:4:5 is heard at bar 289. The second violin line is once more derived from the "Turn" idea, while the composite contour is a chain of rising and falling thirds which echoes the "Threes and Twos" idea and has already been heard as a single melodic line (see violin I, bs.263-5, cello, bs.266-7 and viola, bs.267-9).

(ii) Quartet Sonata, third movement

The Quartet Sonata demonstrates a simpler use of the technique of rhythmic interference patterns (see Ex.7.13). In the final movement, the characteristic dotted rhythm of the opening is reproduced by the composite contour of the flute and oboe parts in bars 332-45.

(c) Acceleration and Deceleration.

The presentation of themes at different speeds is by no means a new idea, but in Carter's hands, it is developed into a formal principle in its own right. While in

later works, such as the Piano Concerto, particular metronomic speeds are associated with "abstract" pitch material (the twelve possible trichords, in the case of the Piano Concerto), in earlier works, the presentation of a distinctive "theme" at different speeds draws the listener's attention to the actual process of tempo modulation.

(i) First String Quartet, Part III

The major transformational technique of Part III of the Quartet is acceleration; the main thematic ideas undergo drastic alterations of character as a result of the gradually increasing tempo brought about by the almost constant process of "metric modulation". Acceleration is used not merely as a transforming device, but also as a structural principle. Table 7.1 shows the successive appearances of what Schiff terms the "Passacaglia" idea; on each occurrence it is played at a faster speed than the previous one. The idea is thus gradually transformed from a pulse-pattern at the beginning, to a quasi-melodic phrase in bar 231, to an impassioned flourish in bar 404 and finally to a flickering tremolo in bar 456 (see Ex.7.14). This process assumes great structural significance as it extends over almost the whole of Part III and embraces such a wide variety of speeds.

Table 7.2 shows an analogous pattern, working on a smaller scale, but also extremely important. At bar 199 the cello begins unobtrusively to state a new idea; a series of twenty notes meandering up and down in scalic patterns and articulated in even pulses (see Ex.7.15). On each successive appearance, this idea proceeds at a faster speed and with greater prominence until at bar 334, it transforms into the rushing scalic figures of the coda to Part II, which is then partially recapitulated (Part

III, b.334 = Part II, b.170). The accelerative process of Part III is thus wedded to the cyclic process of the whole work.

Table 7.1 Acceleration of "Passacaglia" idea in String Quartet no.1, Part III

Bar	Instrument	Pulse unit	MM speed
2	cello	♩ 𝅘𝅥𝅯 𝅘𝅥𝅯 𝅘𝅥𝅯 𝅘𝅥𝅯	24
42	cello	♪ 𝅘𝅥𝅯 𝅘𝅥𝅯	25.6
70	cello	♩. 𝅘𝅥𝅯.	48
115	viola, cello	♩ 7 𝅘𝅥𝅯	57.6
140	violin 1	♩ 𝅘𝅥𝅯	60
179	viola, cello	♩ 𝅘𝅥𝅯 7	72
215	viola	♩	90
231	violin 2	♩	120
309	violin 2	♩	182.25
345	violin 2	♪	216
382	violin 2, viola, cello	𝅘𝅥𝅯	288
404	violin 1	𝅘𝅥𝅯 s	300
408	violin 1, violin 2	𝅘𝅥𝅰	384
452	violin 1, viola	𝅘𝅥𝅰	504
456	viola	𝅘𝅥𝅱	1008

(ii) ***Variations for Orchestra***

The processes described above are further developed in Carter's *Variations for Orchestra* (1953-5) [see Schiff, 1983: 177-9]. In this case, two "themes" take part in complementary processes of acceleration and deceleration. The first to be heard (b.26) is a twelve-note "row" whose seven appearances are at successively slower speeds, ranging between MM 405 and MM 24. The other (first heard beginning in b.42), is a quasi-scalic idea similar to that found in the Quartet. It too is played seven times, gradually accelerating from MM 18 to MM 640. These appearances -

Table 7.2 Acceleration of scalic "row" in String Quartet no.1, Part III

Bar	Instrument	Pulse unit	MM speed
199	cello	♩ ♪ ♪	45
221	violin 1	♪ 7 7	60
245	cello	♩ ♪	90
283	viola	♪.	108
300	violin 1	♪	162
304	cello	♪ 3	243
307	viola	♪ 3	364.5
324	cello	♪ 6	486
328	violin 1	𝅘𝅥𝅯	648

which lead Schiff to describe the ideas as "ritornelli" - are spaced over the entire length of the work, often overlapping so that "the criss-crossed trajectories of the ritornelli outline the large formal shape of the work, which moves from extreme opposition to neutralization to renewed contrast." [: 178] It is interesting to note that the scalic idea consistently moves in equal pulse units, much as that in the Quartet, while the twelve-note idea, whose intervallic content is more varied, is subjected to rhythmic alterations, particularly a form of "stretching" of certain durations (see Ex.7.16).

(d) Quasi-serial procedures.

The examples in the preceding section, particularly the last, are closely linked with those appearing below. Under examination here are those passages in Carter's music which rely upon the recurrence of quite lengthy sequences of pitches akin to the linear presentation of a series or note-row. Such passages hover between conventional notions of thematic recapitulation and a "primitive" serial approach to

thematicism, which treats the row as a kind of theme, whose identity may be modified through rhythmic manipulation, but is nevertheless discernible through preservation of the sequence of intervals or pitches. The term "quasi-serial" in this context thus applies to those techniques which preserve the intervals of a pitch row but alter the rhythmic presentation. The classic serial operations of transposition, inversion and retrograde are included here, but Carter's "rows" are not necessarily twelve notes in length nor do they exhaust the total chromatic range. It should also be stressed that Carter's use of quasi-serial techniques is confined almost exclusively to the horizontal dimension and is never an important organizing force at more than the local level. In other words, his rows are presented linearly rather than harmonically and they are usually just one thread in the midst of a texture whose harmonic characteristics are governed by the forces described in previous chapters.

(i) Piano Sonata, second movement, bb.104-329

The contradiction between the "implicit" harmony and voice-leading of Carter's fugue subject and those of its contrapuntal context has been discussed above (see pp.155-6 and Ex.6.12). Some of the harmonic organization of the fugue may in fact be explained in quasi-serial terms. The subject itself is treated as a "line" of pitch classes whose recurrence guarantees coherence in a complex contrapuntal texture. Carter condenses this "row" by treating only the first and last few notes of the subject. This is then subjected to various rhythmic variations. Some of the resulting transformations are set out in Example 7.17. Bars 169-189 demonstrate the combination of these quasi-rows in a way which suggests something of both the

conventional idea of stretto and the motivic saturation of serial music (see Ex.7.18).

Elsewhere in the fugue, as has been pointed out by David Schiff [Schiff 1983: 129-130], Carter employs this quasi-serial technique to deliberately ironic effect. Between bars 209 and 226, a 21-element pitch class row is combined with a 40-element rhythmic row derived from the rhythm of the fugue subject. Thus the quirky white-note episode *a la* Copland turns out to be the product of a sophisticated rhythmic device relating to the combination of "color" and "talea" in the medieval isorhythmic motet (see Ex.7.19).

(ii) Cello Sonata, first movement

Carter's adaptation of fugal technique in the Piano Sonata looks forward to a recurrent feature of the works of the later 1940s and early 1950s. Example 7.20 illustrates the appearances of a "thematic row" in the first movement of the Cello Sonata. The final statement has an obvious effect of recapitulation, while the third statement, which is the only one to be transposed, suffers the greatest rhythmic alteration and is further disguised by the insertion of "extra" pitches.

(iii) Quartet Sonata, third movement

Example 7.21 demonstrates an interesting variation on this technique from the final movement of the Quartet Sonata. Between bars 349 and 364, there is a partial recapitulation of material from the beginning of the movement (bb.205-216). The melodic line is subjected to transposition, changes of instrumentation, insertion of new

passages and, in 354-7, rhythmic alteration.

The examples from the First String Quartet (Exx.7.14-15) and the *Variations for Orchestra* (Ex.7.16) employ a similar technique. However, from the Double Concerto (1961) onwards, Carter abandoned this fundamentally empirical device as he evolved a more systematic approach to pitch-organisation.

4. Recapitulation.

The proportion of a sonata-type work accounted for by exact repetition may be taken as a simple index of its progressiveness or conservatism. Forms which, in the classical era, were dependent upon thematic recapitulation gave way in the nineteenth century to those dependent upon thematic transformation. The principle of cyclic form, in which the main thematic material returns at various points in transformed guises, arose in conjunction with this development. Schiff's observation that "Carter's forms depend on patterns of motion rather than the repetition of fixed events" [Schiff 1983: 50] is true of his later music, but the traditional concepts of thematic transformation and recall inform much of Carter's work during the transitional period, although in his hands, transformations are often more radical and recollections more fleeting than in nineteenth-century works.

The issue of transposition in relation to recapitulation highlights an important aspect of Carter's stylistic transition. In most of the earlier works, Carter recapitulates material at its original pitch in a manner which affirms his allegiance to conventional notions of tonality and thematicism. Some early works make significant use of transposition in their pattern of recapitulation. *The Rose Family* recapitulates

its opening material at t^1 after the first climax (bb.14-17) to symbolize the semantic "distance" from the opening. In the first movement of the Piano Sonata, the "second subject" is recapitulated at t^6 (compare bb.102-108 with 265-270) and is therefore based on f# rather than the original c, thus bringing this material within the orbit of the tonic, b, in an interesting reworking of the conventional notion of sonata form recapitulation. The final movement of the Cello Sonata recalls material from the end of the first movement at t^1 (IV, 166-171 = I, 117-122). This has the effect of shifting the prominent semitonal clashes of a# against b of the original to b and c in the transposed version. Since the movement is eventually to come to rest on an octave c, this would appear to be an adaptation of the idea of resolution through recapitulation in the home key, despite the fact that, in this work, the sense of key is severely challenged. In some of the later music, transposition becomes rather less significant, even arbitrary, since notions of pitch-centricity, let alone key, are weakened at the local level and abandoned on the larger scale. At the end of the first String Quartet (Part III, bb.483-), the most likely reason for the transposition of the opening material at t^7 is to facilitate its performance on the violin (the first appearance of this material was on the cello).

Recapitulation fulfils the same rhetorical and formal purposes in Carter's works as in those of earlier composers. The most basic use of recapitulation is to create balance after a passage of contrasting material within a clear-cut sectional form. Simple ABA forms can be found throughout Carter's earlier output. Clear examples are provided by *Dust of Snow* and *Warble for Lilac-time*, in each of which, there is a contrasting middle section, differentiated from the outer sections by tempo and texture. Some larger scale movements demonstrate similar basic patterns, albeit carried through

with far greater complexity. These include the second movement of the Piano Sonata and the first two movements of the Cello Sonata. Each of these examples contains some important degree of modification. The recapitulation in *Dust of Snow* is very brief, that in *Warble* begins at t^{10} before returning to the original pitch and then veers into new developments of the highly plastic main material. That in the first movement of the Cello Sonata is subject to a change of register, while those in the second movement of the Piano Sonata and the second movement of the Cello Sonata are considerably reworked, with some passages being condensed, while others are expanded.

A second approach to recapitulation is to treat it as a triumphant return of material in a climactic release of tension. This approach is most closely associated with sonata form, especially in the later nineteenth century; the end of the development section is often fused with the beginning of the recapitulation, so that the tonal and thematic processes of the development are oriented towards the goal of thematic return. Such an approach can be seen in the first movement of the Piano Sonata (bb.243-251). This passage exhibits a rhetoric which belongs to the late Romantic tradition and which Carter was later to eschew; the build-up of tension produced by a steadily rising linear process in fast tempo leads to a massive chordal climax in which the sense of pulse is arrested; the recapitulated material dwells on repeated gestures and is subjected to registral displacements which emphasize the "dramatic" gesture of the octave leaps present in the original theme. Since this is Carter's only real engagement with sonata form in his chamber music, this is a somewhat isolated example, but it is characteristic of the work as a whole, which relies more than most of Carter's subsequent works on repetition of large sections.

Carter's most characteristic use of recapitulation is in a kind of ritornello form, in which each reappearance of the main material serves as a springboard for new development. Such is the case in *Voyage* and the *Pastoral.* In *Voyage*, the main idea recurs at the same pitch throughout, whereas the *Pastoral* employs a variety of transpositions and transformations. The last two movements of the Cello Sonata and all movements of the Quartet Sonata and the first String Quartet employ developments of this kind of form, which tends towards continuous process rather than sectional juxtaposition. The second movement of the Quartet Sonata is built from a collage-type sequence of relatively brief ideas, some of which recur in very similar form while others are continually altered.

Finally in this section, Carter's handling of cyclic form will be examined. Carter often attempts to create the impression that the work is returning to its origins, creating a circular pattern (see Schiff 1983: 47-48). This is sometimes combined with the idea or illusion that we have never left the origins[10]. The Piano Sonata, Cello Sonata and first String Quartet all employ some variant of this device. In the former, there is a coda which synthesizes elements of themes from the second movement with those from the *maestoso* passages of the first movement and gradually liquidates their characteristic features. The Cello Sonata and String Quartet share a process of heightening tension (principally carried out through acceleration), culminating in the recall of earlier material, at first forcefully, but gradually liquidating and fading.

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[10] See Carter's reference to the influence of Cocteau's film *Le Sang d'un poete.* [*CEL*: 233] and also Schiff's mention of Joyce's *Finnegans Wake* [Schiff 1983: 47].

PART THREE: ANALYTICAL STUDIES

CHAPTER 8: PIANO SONATA, FIRST MOVEMENT

The Piano Sonata is widely regarded as the first of Carter's works to deserve inclusion in his mature *oeuvre*, despite its basically neoclassical idiom. It is certainly clear that the composer himself thinks of it as a turning point:

> I [...] have been interested in pursuing the possibilities of dramatic contrast and interplay offered by the individual character of instruments and have attempted in all my works, at least since my Piano Sonata, to exploit these possibilities in the most vivid ways I could imagine. [Edwards: 68]

> By 1945... I became more concerned with the formation of musical ideas, of types and qualities of continuity, and with the fascinating possibilities of musical flow and change. The opening of my *Piano Sonata* of 1946 will illustrate what I mean. It is the first passage in my works that is not primarily thematic. Its central idea comes from the total sound of the piano writing. Notice particularly the variety and flexibility of rhythm, the frequent changes of character, the oppositions of register, of manners of playing, and of slow and fast. All of these were to become increasingly important. [Radio Broadcast "The Composer's Choices" c.1960 and *CEL*: 213]

Other commentators on the work have elaborated on the Sonata's pivotal role, the prevailing argument being that while it adheres to the harmonic and rhythmic language of Carter's earlier period, some aspects of its form and the treatment of the instrument adumbrate the composer's later practices. Schiff states that the Sonata "looks in two directions" [Schiff 1983: 123]. Harvey maintains a similar view: on one hand, the Sonata contains for the first time in Carter's music "the direct association of the musical materials of a work with instrumental characteristics and the performing situation", and on the other, it represents "Carter's last extended essay in musical Americanism" [Harvey: 19].

The obvious "backward-looking" features of the work are its allegiance (at least on the surface) to traditional tonal forms (sonata in the first movement, fugue in the

second), its thematicism (including much use of cyclic quotation) and the retention of key-signatures (although these do not indicate a conventional approach to tonality). The most obvious "forward-looking" element is the extreme rhythmic fluidity of the *scorrevole* material, which prompted Carter, under the influence of his editor Kurt Stone, to abandon time signatures in the first movement. However, there are aspects of Carter's technique in this piece which are connected more fundamentally with his later music. These include the formalized tempo relationship between the *maestoso* and *scorrevole* of the first movement (sharing a common pulse of minim = 66), the derivation of harmonic materials from the basic acoustic properties of the instrument and the exploitation of the relationship between musical materials of opposing character.

This chapter will begin with a consideration of the influences on Carter's Sonata, particularly its place in relation to the "American" idiom, before proceeding to an analysis of the first movement's structure and language in the light of the issues addressed in Chapters 4 to 7.

1. Populism and other influences

> The style and technique of the Sonata seem at times to invoke Copland and Debussy. The opening phrases of both movements suggest Copland's Piano Sonata which predates Carter's by four years. Carter also cites, in passing, Copland's Piano Variations: these echoes I believe were intended as a homage. Carter's Sonata is written in the tradition of Copland's piano music [...] but it transforms Copland's gestures into a recognizably new and personal idiom with a greater variety of moods and textures, and a greater contrapuntal density. [Schiff 1983: 124]

Schiff's observations on the relationship between the Piano Sonatas of Copland and Carter raise an important question; the extent to which Carter on the one hand

adopts the musical language of American populism as a natural means of expression and, on the other, challenges and undermines it from within. Carter's uneasy relationship with Populism has been discussed earlier (see pp.36-43). Evidently there was a conflict between his personal belief in the artistic value of sophistication and complexity and a politically motivated commitment to simplicity and immediacy of communication. This conflict can be seen to have consequences for the musical substance of the Sonata. The elements of the musical language which Carter inherited in the 1940s have their origin in Copland's style. However, the uses to which they are put in Carter's Sonata occasionally transform them in ways which conflict with the aesthetics of populism and neoclassicism. A comparison between the Piano Sonatas of these two composers will show the debt of Carter to Copland and also the degree to which Carter turned the populist idiom of the older composer to his own ends.

For both composers, the genre of chamber music presented an opportunity to develop the newly created musical idiom on an intimate rather than public scale. However, the similarity in motivation ends here. Copland's Piano Sonata and Violin Sonata (1942-3) are relatively isolated chamber works within a phase dominated by works aimed at the larger audience, stretching from *El Salon Mexico* (1936) to the Third Symphony (1946). For Copland, the scaling down of musical language from the concert works and ballets to the Sonatas was successfully achieved, producing works which are among his most perfectly balanced and lucid. Carter, however, was drawn to chamber genres largely through dissatisfaction with the state of American orchestral music and its audience. Chamber music offered the possibility of writing works of *greater* complexity, whose performance would not be compromised by the difficulty of rehearsing larger groups and whose reception would not be doomed from

the outset by the stubborn conservatism of the public. Between 1945 and 1953 he wrote only one orchestral work, the ballet *The Minotaur* (1947).

The Sonatas by Carter and Copland share many elements of musical language, both general and specific; a small selection will be discussed in order to highlight the similarities and differences of approach. Harmonically, both works employ the unconventional diatonicism that is a hallmark of neoclassicism. The characteristic features are:

> (1) the creation of harmonic tension from the potential for "false relations" within the system of diatonic fields described in Chapter 4;
>
> (2) the avoidance of conventional tonal relations and pure triads except at points of closure, where they are referential rather than functional;
>
> (3) the employment of certain "Stravinskian" pitch configurations such as the superimposition of tonic and dominant triads or other juxtaposed triads;
>
> (4) the use of consonant intervals - especially perfect fourths and minor thirds - moving in parallel in stepwise motion in a manner which parodies conventional tonal voice-leading.

Rhythmically, similar ideas can be detected in the two works. Regularity and symmetry are played off against their opposites. Beats, bars and phrases are expanded or contracted to produce an ambiguous or fluctuating sense of metre. Ostinatos are set up only to provide a foil to the prevailing sense of fluidity and elasticity.

Formally, there are some interesting similarities. Both composers employ cyclic themes and cross references. Copland's final movement grows from the germ of material first heard in the "trio" of the scherzo and culminates in a return of the main material of the opening movement. The coda of Carter's Sonata mingles material from both movements. A structural similarity can be discerned between the first movement of Copland's work and the second of Carter's. In each, moderately

paced outer sections flank a faster central section, the final section being a condensed recapitulation of the first. The outer sections of both movements contrast predominantly chordal main material with more lyrical subsidiary material.

Probably the single most important factor which distinguishes Carter's work from Copland's is the approach to formal continuity. Copland, attaching himself very closely to Stravinskian neoclassicism, favours the juxtaposition of sharply contrasted blocks within which harmonic motion is relatively static. Carter, in contrast, proceeds through sweeping evolutionary arcs, during the course of which musical matter is continuously transformed. It would be wrong to describe either of these approaches as more radical or genuinely "modern", since both have auspicious precedents dating back to the works of the acknowledged masters of early twentieth century music. It would also be wrong to ascribe one manner of composition exclusively to either composer. What the comparison does show is Carter's impatience with music in which, in his words, "first you do this for a while, and then you do that" and his desire to "mix up this and that" [*CEL*: 229].

In general, the differences between Copland's Sonata and Carter's from this perspective are those of degree. Carter's work is more contrapuntal, rhythmically more fluid, more varied in texture and harmony and therefore more complex and less accessible to "popular" understanding. A comparison at this level suggests merely that Carter sought to enrich the idiom in which he had chosen to express himself. However, other factors suggest a more ambivalent attitude towards American populism, one which viewed it as flawed by naivety and therefore susceptible to ironic treatment which undermines its implicit aim of straightforward communication. It is in the area of thematic typology and its relation to the elements of musical vocabulary

that this ironic strain is most clearly revealed, particularly in the form of parody.

The thematic typology of American populist music derives to a certain extent from native American music, whether jazz or popular marches and hymn tunes. The cowboy tunes, Latin American dances and Quaker hymns which find their way into Copland's music have no place in Carter's. (The example of Ives, whose borrowing of popular material appeared to Carter to be uncritical and simplistic, probably dissuaded him from literal quotation of this kind.) However, many Copland fingerprints can be detected in Carter' music. Copland's style, particularly during the populist phase, depended on the cultivation of instantly recognizable thematic "types", almost comparable with the system of rhetorical figures of a much earlier period. Some of the principal rhetorical modes of Copland have closely corresponding counterparts in Carter's music of this period and are perhaps the most obvious (and superficial) illustrations of the influence of the older composer on the younger. One characteristic "type", for example, is the nervous, fragmentary style, in a fast tempo but metrically irregular and/or using rubato. (See Ex.8.1, the opening of the second movement of Copland's Sonata and bb.76-103 of the second movement of Carter's.)

A relatively straightforward example of Carter's adaptation of Copland's rhetoric may be obtained by comparing the triumphant recapitulations of the opening material in the first movements of the two Piano Sonatas (Ex.8.2 Copland I:206, Carter I:243). Both passages employ massive octave displacements of melodic material which was previously restricted in range, combined with harmonic intensification. These passages both exemplify a type of grandiose declamation which is a common rhetorical type of American populism, but it will be noticed that the

degree of transformation in the Carter is more extreme.

Within this same rhetorical type, another comparison shows Carter in subversive mood. The "second subject" material in the first movements of both Sonatas is subjected to similar apotheosizing treatment shortly after its first statement. In both works, this takes the form of massive downward-sweeping gestures, gradually expanding in length and mainly employing stepwise motion (see Ex.8.3(a) Copland I:123 and (b) Carter I:102.) In the Carter example, however, an ironic tone is introduced by prefacing this passage with an overblown parody of a perfect cadence, whose extreme chromaticism creates an exaggerated contrast with the "fervently" pure diatonicism of the succeeding passage. Despite its surface similarity to the Copland example, this passage is far more complex contrapuntally, since it takes the form of a three part canon, with the third part imitating by inversion (and later doubled at the third). A further irony arises from the cultivation of such learned contrapuntal sophistication in a passage whose static modal harmony and meandering melodic motion almost create an effect of aimlessness.

The frame of reference for Carter's Sonata is of course much wider than that suggested by its conjunction with Copland's in this section. The conflict between b and b flat, which is pursued throughout the work suggest a point of contact with Beethoven's *Hammerklavier* Sonata or Liszt's B minor Sonata. The two movement form, incorporation of material of widely varying tempo and character within single movements and the use of fugue also suggest a Beethovenian connection (see the Sonatas Op.109, 110 and 111). The context of American piano music in general should also be considered; in particular, the influence of tonal and rhythmic elements in the First Sonata of Roger Sessions (1927-30) and textural and contrapuntal elements

in Ives's *Concord* Sonata (1911-12) on Carter's work should be remarked. This breadth of reference is another factor which distinguishes Carter's Sonata from Copland's; while Copland may be more "himself" in his work than Carter is in his, the greater scope of the latter's imagination is clearly in evidence here and is at odds with the self-contained clarity of the former.

2. "Sonata Form".

The reinterpretation of sonata and other conventional forms in modern terms was a crucial item on the compositional agendas of all those who wished to give their work a legitimizing link with the music of the past, whether or not their aesthetic was an explicitly neoclassical one. The subject has been discussed at length by J.Straus in *Remaking the Past* [Straus 1990: 96-132]. The context of that book is the supposed "anxiety" of early twentieth century composers in relation to their forebears; its thesis is that in order to assert their individuality, it was necessary for the later composers to employ strategies of creative "misreading" of traditional materials, techniques and structures.

Carter's approach to the sonata principle in this movement is an ambivalent one, drawing on modernist ideas as well as on nineteenth-century practice. Avoiding the question of whether this exhibits any "anxiety" on Carter's part, it is nevertheless clear that two of Straus's observations are applicable in some degree to this movement: that in order to engage in a struggle with tradition, composers may (1) "subvert the form's traditional impetus towards reconciliation" (as in the first movement of Stravinsky's *Symphony in C*) or (2) "set in motion musical forces that strain against the

boundaries of the form" (as in Bartók's Piano Sonata). The latter, in particular, chimes with Schiff's assertion that in Carter's hands "sonata is no longer a 'form', but a rushing stream echoing across a vast landscape" [Schiff 1983: 125]. At first glance, the potential for a dynamic conflict of opposites, whether tonal or thematic, offered by sonata form would appear to make it an attractive vehicle for a composer of Carter's disposition, but the first movement of the Piano Sonata is the only example of a "sonata form" movement among his sonatas. Speculation, based on knowledge of his later development, regarding the reasons for the rarity of Carterian sonata form leads to two conclusions; (i) that Carter's gradual abandonment of tonality and thematicism rendered the sonata principle an inappropriate form-building idea and (ii) that the basic expository procedure of sonata (and many other traditional forms), which is to present opposed ideas *successively* is superseded in the later Carter by techniques of *simultaneous* presentation.

The points of contact between conventional sonata form and Carter's are clear; there is a contrast of thematic material, characterized by opposing expressive characters, tonal centres and tempi; there are clearly demarcated passages of exposition, development and recapitulation, following the expected sequence of events; and there is an organic relationship between the outwardly contrasting thematic material. The table below summarizes the internal structure of the movement:

EXPOSITION	DEVELOPMENT	RECAP.	CODA
123	224	270	303

The divisions on the table may be justified straightforwardly. The junction

between exposition and development is marked by a double bar, a return to the opening *maestoso* tempo and a ghostly reappearance of the opening theme. That between development and recapitulation is more difficult to detect aurally because of the continuity of tempo and figuration, but the restoration of the key signature of five sharps at the start of bar 223 and the almost exact repeat of bars 15-18 in bars 222-226 are clear indications of the composer's intention. The coda begins with a resumption of the *scorrevole* tempo of the main body of the movement.

Carter's formal innovations lie in the relationships between the tempi of the thematic materials, in the movement's internal proportions and in the approach to key-structure. The principal tonal and thematic material of the movement combines slow (*maestoso*) and fast (*scorrevole*) music, related through a common pulse. The *maestoso* opening of the Sonata initially sounds like a recreation of the classical slow introduction, but it becomes apparent that this is not to be the case. It reappears at the opening of the development (bb.123-133) and at the climax of the recapitulation (bb.252-264), the latter creating a significant reordering of the presentation of the movement's main themes when compared with the exposition. The reappearance of material from a slow introduction at crucial stages during the course of a movement has many precedents (viz. Beethoven String Quartet Op.127, Schubert "Great" C major Symphony, Brahms Symphony no.1); what is unusual here is the close interpenetration of the two types of material, the *scorrevole* appearing to grow seamlessly out of the *maestoso* and melt back into it.[1]

The subsidiary material of the movement (which fulfils many of the

[1] See Chap.7, pp.172-174 for an illustration of this effect in the first thirty-two bars of ə movement.

conventional functions of a "second subject") unfolds at a moderately paced *meno mosso* (♩ = c.72). The very imprecision of the metronome mark sets it apart from the calculated interplay of opposites of the main material, as do the frequent *rubato* and *ritard./a tempo* instructions (see bb.91and 109). There is no attempt to relate this tempo to those of the *maestoso* or *scorrevole* systematically. Instead, the *meno mosso* tempo is confined to two passages (bb.83-122 and 265-270) which are clearly cut off from the surrounding music by silence or sustained notes, the absence of audible pulse being the antithesis of the technique of metric modulation Carter was later to employ. On the face of it, this approach would appear to be a conservative throwback to the nineteenth-century practice of placing the "feminine" second subject in a more leisurely tempo, but there are connections between the main and subsidiary material which suggest a less conventional attitude. Most importantly, the *meno mosso* continues the metrical flexibility of the other sections, but with a quaver pulse and predominantly scalic melodic shapes taking the place of the semiquavers and arpeggiated shapes of the *scorrevole.* Furthermore, there are thematic connections; the septuplet *gruppetti* of bars 81 and 297-9 in the *maestoso/scorrevole* tempo are clearly meant to have the same effect as those in bars 108, 112 and 114-5 of the *meno mosso* and are presumably to be played at the same speed.

The internal proportions of the movement are not those of the conventional model, but nevertheless follow a plan which is not entirely unprecedented. Expressed as percentages of the total performance time of the movement, the durations of its constituent sections are: exposition 48%, development 26%, recapitulation 17%, coda 9%. Thus, almost half the duration of the movement is given over to exposition, after which there is a far-ranging, but concentrated, development leading directly into

a drastically curtailed recapitulation and a brief coda. As each major section takes only just over half the playing time of the previous one, the effect is of progressive concentration of argument and acceleration towards a final goal. This approach is essentially dynamic and developmental, the antithesis of the static, symmetrical model suggested by Straus as one of the main modernist misreadings of sonata form [Straus 1990: 132]. The *scorrevole* material, with its upward thrusting gestures and tendency to proceed through rising sequences, is the main agent of this dynamism. The *meno mosso*, on the other hand, achieves its definitive melodic shape in downward-drifting phrases (see b.102), before allowing itself to "disintegrate" into meandering and registrally disconnected phrases and fragments in bars 109-121. The relatively swift progress of the development is due to its continuous adherence to the *scorrevole* tempo and manner. This in turn necessitates the drastic reduction of this material in the recapitulation in order to avoid redundant repetition. The dynamic process of the development is allowed to spill over into the recapitulation, so that tension is only dissipated in the wake of a massive, apotheosis-type restatement of some of the exposition's thematic material (bb.252-264). After this, there is a very brief recall of part of the "second subject" material before the coda restores the *scorrevole* tempo and the dynamic urgency of the development. While Straus's reference to "musical forces that strain against the boundaries of the form" and Schiff's to a "rushing stream" capture the exhilaration of the movement, it should be noted that Carter's approach is not unique; twentieth century sonata-forms as diverse as the first movements of Shostakovich's Fifth Symphony and Ravel's *Sonatine* employ some variant of this plan.

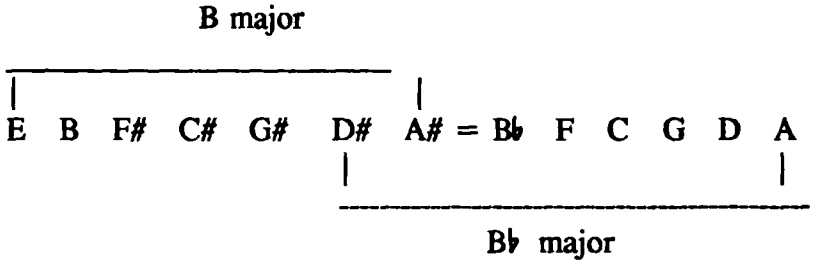
Harmonically, the movement does not exploit the conventional tonal tension between tonic and dominant, or tonic and relative minor, but employs a variant of this

idea, with the tonic b, being challenged by its own leading-note a# (respelled as b♭ when it asserts its independence from b) during the "first subject" material, while the "second subject" takes c as a tonal centre. Tone centres a semitone apart thus take the place of more conventional tonal relations. However, the classical resolution of tonal tension through the ultimate triumph of the tonic is avoided. While the coda of the movement includes passages which emphasize b as a melodic and dynamic high point (bb.288-9 and 293), these are not underpinned by metrical or harmonic closure. In the closing bars, the tension between b and a# remains unresolved, either through the use of ambiguous complex harmonies (such as the implied superimposition of tonic and dominant in b.301) or through the avoidance of harmony altogether (the texture of the final three bars is reduced to bare octaves). The last two sustained notes, f and b♭, clearly pose a tonal question, implying as they do a usurpation of the expected tonic resolution.

The use of a non-dominant counter-pole to the tonic is by no means unprecedented in the late nineteenth and early twentieth centuries, nor is a sense of tonal ambiguity. However, coupled with the conflict between tonal centres, there is a conflict between different kinds of harmonic context (diatonic/chromatic, consonant/dissonant), engendered through Carter's manipulation of diatonic fields. In this respect, his work shows a kinship with works by Debussy, such as "Reflets dans l'eau", in which key-relationships are less significant than the contrast between diatonic, whole-tone and pentatonic fields. In order to explore this area more thoroughly, the harmonic building blocks of the movement must be analyzed.

3. Harmonic materials: structural consequences

In descriptions of the musical language of the Piano Sonata, much has been made of the derivation of musical material from the nature of the instrument itself. Both Schiff and Harvey take as their starting points the interaction between acoustic and tonal phenomena in the work's harmonic organization. Schiff describes it in terms of "two extremes and a mediator" [Schiff 1983: 126], the "extremes" being the natural resonance of the overtone series and the cancellation of this effect of resonance by chromatic, semitonal dissonance. The "mediator" is the cycle of fifths, which in its entirety constitutes a twelve-note set, but when presented partially, generates diatonic and pentatonic scales. Schiff illustrates his theory by writing out the cycle of fifths as two overlapping diatonic sets:



The argument is summarized with the statement that "the pitches B and A# and the tonalities of B major and B flat major are the major elements of harmonic organization in the Sonata." [Schiff 1983: 126]

Harvey, in his brief discussion of the work, develops Schiff's line of thought and states that "both the characteristic harmony and the elaborate figuration of the first movement grow from the overtone series of the work's first pitches and their conflict with fifth-cycles based on the same pitches b and a#, thus developing the texture from

the particular resonance of the instrument itself." [Harvey: 19]

These accounts, while containing some truth, require more careful qualification.[2] Essentially, the harmonic language of the Sonata derives from alternative interpretations of a central "Key-chord" or source set. This is presented in its clearest form not at the opening of the Sonata, but in two passages whose unique, translucent sonority makes them stand out from the dense textures of the rest of the work. (See Ex.8.4(a) I, 123-8 and (b) II, 388-92.) At these two points, the thematic material of the work is *literally* generated using the acoustical properties of the instrument. In Ex.8.4(a), the silent depression of the c_4 and $e\flat_4$ keys allows these strings to vibrate sympathetically, generating harmonics when other keys are sharply struck. In the case of the first sonority, the harmonic $e\flat_6$ appears so strongly because it is present within the audible harmonic spectra of both lower notes, being the third harmonic of a fundamental $a\flat$ and the seventh of a fundamental f. The c_6 is similarly well supported, being the third harmonic of a fundamental f and the fifth of a fundamental $a\flat$. The composite sonority (f,$a\flat$,c,$e\flat$) may be regarded as the "key-chord" of the work. Having thus been generated acoustically, it is exploited by Carter for its intervallic content and possible tonal implications.

In set-theoretic terms, this sonority is the symmetrical tetrachord 4-26. It can

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[2] Both writers seem to imply that the harmonic series can actually be reproduced on the modern piano, but since the piano is fixed in equal-temperament tuning, it can only produce an approximation of the harmonic series, and in practice it is virtually impossible to detect harmonics other than the first few - the compound octave, perfect fifth, major third and minor seventh above the fundamental. Schiff's statement (leaving aside its inappropriate reference to "tonalities") implies that the harmonic series stands in a similar relation to the cycle of fifths as the chromatic and diatonic scales do; in other words, that one is equivalent to, or a subset of, the other. This is not, in fact, the case, since the cycle of fifths in equal temperament is based on an adjustment of the simple frequency ratios of the harmonic series.

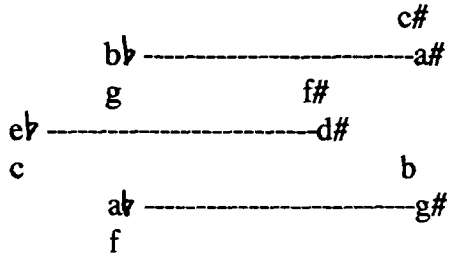
be partitioned into complementary pairs of intervals (ic3 and 5) as may be seen by examining the interval vector [012120]. (See Appendix 3.) This symmetrical pairing is made explicit in the opening bars of the Sonata (refer back to Ex.6.4(b)). The single major second (ic2) in the tetrachord is also exploited as a motive in bars 10 and 13. The minor third (ic3) also takes on a highly important thematic role (see especially bb.171-180 and 197-200 in the development).

Returning to Ex.8.4(a) and taking in the total pitch-content of bs.123-8, it will be observed that it consists of two alternating versions of 4-26, pivoting around a shared minor third dyad. The symmetrical structure has thus been extended to form the diatonic hexachord 6-32, as in Example 8.5. 6-32 is a segment of the cycle of fifths and of the diatonic scale; both segments are symmetrical structures. In fact the symmetry of 6-32 can be expressed in a variety of ways, there being three axes of symmetry (the dyads b-a#, d#-f# and c#-g#). One of these symmetrical arrangements partitions the collection into two overlapping statements of tetrachord 4-23. (See Ex.8.5(b).) This tetrachord shares with 4-26 a symmetrical interval structure including ic5+ic5. Like 4-26, 4-23 has a pervasive thematic significance, especially in the form of the arpeggio figure in fourths and fifths which it takes in bar 3 (see Ex.8.6).

The interaction between the symmetrical and the diatonic implications of these sets is an important feature of the work's harmonic organization, and one which influences our perception of its "tonality" or "atonality". Example 8.7 illustrates how the set 4-23 is used to generate passages of quite different harmonic character, which nevertheless share some textural features and a common pitch-centre. (Also see Exx.4.6 and 6.9(a).) In Ex.8.7(a) the beginning of the "second subject" (bb.83-4) is

shown. As was illustrated in Ex.6.9(a), the melodic line is formed from adjacent linear statements of 4-23, creating a texture in which chromatic saturation is counter-balanced by the privileging of c as a tonal centre through registral placement and symmetrical intervallic processes. Ex.8.7(b) shows the second phase of the second subject (bb.102-4). The same initial transposition of 4-23 [10,0,3,5] results from the canonic imitation of the falling major second, but here, it is the diatonic rather than the symmetrical aspect of 4-23 which is emphasized, since the canonic lines are extended to form segments of the diatonic scale set 7-35. C is again felt as the tonal centre, because of its emphatic use as a pedal and as the temporal and registral starting point of the highest melodic voice. This tonicizing of c within a pure diatonic field of $A\flat$ produces a feeling of "Phrygian" modality.

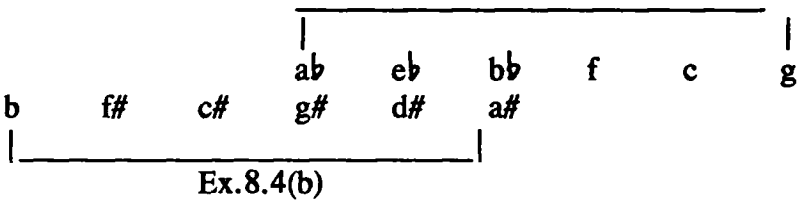
Further elements of the work's harmonic structure may be introduced by referring again to Ex.8.4. Comparing the total pitch content of Ex.8.4(a) and Ex.8.4(b), it will be seen that the two passages share a common subset, the pitches $a\flat$, $e\flat$ and $b\flat$ (or g#, d# and a#). The harmonic content of the later passage may be obtained by "pivoting" that of the earlier passage around the pitch d#/$e\flat$:



This could be seen as a realization of the potential suggested in Schiff's diagram (reproduced on p.192), in which the cycle of fifths is partitioned into two overlapping diatonic scales of B major and B flat major, but in the actual context of the work, there is a more complex relationship between diatonic fields and tonal centres to

consider. The pivoting around a central pitch produces the effect of a reorientation of diatonic field within the cycle of fifths, so that while the earlier passage suggests a field of *A♭/E♭*, the later one suggests *B/F#*. However, the situation is complicated by a contextual sense of tonal bias which unbalances the pure symmetry of this scheme. In Ex.8.4(a), the dyad c-e♭ represents the tonal centre of c which has been in operation for most of the preceding passage (the "second subject" of the first movement). However, in the music following Ex.8.4(b), the dyad d#-f# comes eventually to be absorbed into a composite tonic/dominant chord based on b (the final b-d#-f#-a#-c# sonority of the sonata). Thus the shift of diatonic field between the two passages, combined with the asymmetrical shift of tone centre produces quite different scalic structures:

Ex.8.4(a)



Ex.8.4(b)

Ex.8.4(a)	c	[d♭/d]	e♭	f	g	a♭	b♭
Ex.8.4(b)	b	c#	d#	[e/e#]	f#	g#	a#

The idea of harmonic pivoting around a fixed pitch, which can be reinterpreted enharmonically, is a crucial one in the sonata. In particular, the reinterpretation of d# as e♭ during the course of the exposition of the first movement is an important adjunct to the opposition of tonal centres a semitone apart. This pitch-class forms the third of a triad, under which b and c alternate as roots. Example 8.8 offers a summary of this process.

It is also possible to regard Ex.8.8 as a "background" manifestation of set 3-3 [0,1,4]. The large-scale progress of the exposition would thus appear to be related to the details of the local level, since this set an its relatives are the principal agents in the chromatic assault on the prevailing diatonic context.

The analysis which follows focuses on a passage from the movement which exemplifies the harmonic, linear, tonal and thematic processes outlined thus far, putting them into the formal context of the movement as a whole.

4. Exposition, bb.1-82

This passage, which comprises the exposition of the "first subject" material (the *maestoso* and *scorrevole*) and its subsequent development and "crisis", leading into the second subject, is undoubtedly the most deftly controlled handling of oppositional tensions in Carter's early work up to the Cello Sonata. The basic oppositions are:

(i) between the slow pace, low to middle register, sustained tone and predominantly chordal texture of the *maestoso* and the rapidity, volatility, high register and predominantly linear writing of the *scorrevole.* While the fundamental linear processes of the *maestoso* can be heard in operation most clearly in the lowest register, this is only intermittently present in the *scorrevole*, which concentrates similar processes in the uppermost voice;

(ii) between the harmonic clarity of passages which adhere to a particular diatonic field, and the ambiguity and tension created through chromaticism and non-diatonic dissonance;

(iii) between the tonal centre of b and those of its semitonal neighbours a# and

c (oppositions which entail much play on enharmonic pivots, especially d#/eb, f##/gb, a#/bb and b#/cb);

(iv) between regular and irregular rhythmic grouping;

(v) between different modes of continuity (unbroken process versus abrupt change);

(vi) between clearly identifiable themes and more neutral material embodying harmonic and linear processes.

(a) Bars 1-32

This opening section exposes virtually all the oppositions described above. Perhaps the most fundamental overall tension is that between b and a# as tonal centres, an opposition which subsumes that between the different tempi. The relationship between these two pitches is played out over several registers in a manner which suggests comparison with Schenkerian structural levels. The initial five-octave b (spread over bar 1 and the beginning of bar 2) sets out the registral space in which the ensuing *maestoso* is to evolve. In bars 24-25, this opening gesture is repeated transposed down a semitone, but with the added complication of g# appearing in the second and fifth octaves. While the association between these two points is clear, it would not be appropriate to describe this relationship as a prolonged neighbour note motion since so much of the intervening *scorrevole* material, especially in the lower register, is deliberately discontinuous and tonally ambiguous. However, within the *maestoso* passages themselves (bb.1-14 and 24-32), the harmonic and linear jostling between the two pitches is presented in a more sustained fashion. Tension arises

from the increasing ambiguity of their relative structural status; which is the structural tone and which the neighbour note?

(i) *Maestoso*: bb.1-14

The status of the initial b as a tonic is immediately challenged by the harmony superimposed above it. As was illustrated in Chapter 6 (p.137 and Ex.6.4(b)), the pitches of the first chord in bar 2 may be interpreted as neighbours to an implied B major chord. Combined with the pitch b, they produce a "dominant seventh" type sonority, the conventional resolution of which would involve the b descending a semitone to a#. The actual progression to a more extreme dissonance on the last minim of bar 2 violates this expectation and further complicates the sense of tonal function. The c♮ in the left hand is ambiguous in itself, since it suggests two possible aural interpretations. It could be regarded enharmonically as b#. This would entail hearing the two chords of bar 2 (excluding the octave b) as a I-V^7 neighbour chord progression in C# major, requiring resolution by raising the b# a semitone to c#. (Notice that the semitonal link from the c# to the putative b# has been displaced by an octave.) Alternatively, the c♮ might act as a "Neapolitan" neighbour note to b, needing to be absorbed back into the tonic by descending a semitone. Carter denies both these possibilities by proceeding to a "b minor chord" as the c♮ rises to d♮. There is also a sense in which this $d♮_4$ is a displaced semitonal descent from the $d\#_5$ of the previous chord, moving in parallel with the falling octave f#, and echoing the $c\#_5$-$c♮_4$ relationship of the previous progression. The direction of these displaced linear connections is reversed as bar 3 proceeds to bar 4; the semitonal descent of the b_3 and

d_4 is thrust up an octave to $a\#_4$ and $c\#_5$, thus bringing the latter dyad into a register in which the aural connection with the $d\#_5$-$f\#_5$ of bars 2-3 is clear.

Such a complex matrix of semitonal neighbour relationships - actual, displaced, implied and often contradictory - is emblematic of the harmonic language of the work as a whole, but, in order to gain a balanced view of this subject, the interaction between such quasi-tonal relationships and pitch-class sets and relations must be investigated. The important thematic role of Type A diatonic sets 4-23 and 4-26 has been made clear, but the role of non-diatonic sets must also be pointed out, especially those related to the atonal trichord 3-3 mentioned above (p.217). The first non-diatonic sonority heard in the work is that containing the "troublesome" c♮ in bar 2: 4-18 [0,1,4,7][3]. While this appears at first as a B major triad infiltrated by a chromatic "foreign body", it should also be regarded as an embodiment of some of the movement's important intervallic relationships: it contains two ic3s (as does 4-26), may be partitioned into ic3+ic5 (like 4-23) and contains the all-important semitone. It will reappear at moments of harmonic tension as a referential sonority.

In bars 4 to 7 (first minim), registral and harmonic factors give a# the ascendancy. A# is presented in four octaves, the middle two of which are sustained throughout. The rhythmic figure of bar 4 represents a drastic contraction of the work's opening rising octave. In place of the extreme harmonic ambiguity of bars 1-3, this passage presents a stable diatonic field of *C#*, until the f## in the middle voice of the left hand part takes it into *G#*. The level of dissonance is reduced, with fewer semitonal clashes employed, although the linear use of semitones is still an important

[3] The importance of this set in Carter's work in general has already been pointed out Chapter 5 (see p.116).

feature. The only tonal uncertainty is whether a# is to be heard as the leading note of B major or as the dominant of D# major. The final harmonic twist of this phrase (the motion from f# to f##) appears to tip the balance in favour of the latter. This possible interpretation of a# as V of d# is latent in the progression used in bars 10 and 13, and is alluded to later in the movement, but is not realized until the last page of the sonata. (See bb.395-8 of the second movement.) The comparatively straightforward harmonic character of this phrase when compared with bars 1-4 is underlined by its temporal contraction of the events of the first phrase from eleven minim beats to six.

B is asserted strongly again in bar 7, with a repetition of the rising octave figure of bar 4. Now the conflict between b and a# is presented explicitly in the vertical dimension. B_2 and b_3 are sustained in the left hand in bars 7-10, supplanting the $a\#_2$ and $a\#_3$ of the preceding bars, and the aggressive rising octave is repeated in bar 9. Against this, the right hand unfolds a melodic line which emphasizes the octave from $a\#_3$ to $a\#_4$. The level of dissonance is correspondingly higher, the initial sonority of this phrase being another non-diatonic relative of 3-3, 4-19 [0,1,4,8]. This dissonance is gradually softened, however, first by the rising motion of f## to g# in bars 7-8, which is repeated in bar 9, and then by the relinquishing of b in the lower registers in favour of a# again in bar 10. At the end of the phrase, the use of the diatonic and relatively consonant 4-26 rooted on a# produces a clear sense of harmonic relaxation. The augmented repeat of bars 10-11 in bars 12-14 clearly confirms the arrival of a# as the local tonal centre, especially through the textural devices of reducing to bare octaves in bar 12 and recapturing the extreme bass register, which has not been heard since the first bar.

(ii) *Legato scorrevole*: bb.14-23

The opening of the *scorrevole* passage (bb.14-15) fulfils several functions:

(1) it begins with a repetition and extension of the rising semiquaver figure of bars 3 and 11, revealing and developing the potential of this brief motive to generate musical ideas independently of the *maestoso* material which originally surrounded it.

(2) it presents a third repetition of the a#-a#-g# motive heard in bars 10 and 12-13, and then uses this as a springboard for further motivic development.

(3) it adumbrates the left hand motive of bars 20-22.

(4) it opens up the higher registers of the keyboard, up to b_6, continuing the interplay of octaves of the preceding section.

(5) it presents, for the first time in the work, the diatonic field of *B*, which, combined with the brief appearance of b_1 in bar 15, swings the b/a# argument temporarily back in the favour of b.

(6) it replaces the regular minim pulse and simple duple/triple alternations of pulse groupings of the *maestoso* with an intensely irregular pattern of groups of semiquavers.

The types of tonal ambiguity - caused by chromatic alterations, false relations and enharmonic changes - employed in the *scorrevole* are similar to those of the *maestoso*, but because of the much faster tempo, they barely have time to register. This, coupled with the frequent disjunctions of line in the left hand part in bars 15-19, makes a passage such as this harder to hear in terms of harmonic functions and linear processes than is the first *maestoso*. Those processes which can be clearly discerned are:

(1) a gradual descent in the right hand part in bars 16-19, in two stages; (i) beginning on e_6 and falling twice through ic3 to $a\#_5$; (ii) falling in a linear pattern through ic2 from $a\#_5$ to $g\#_5$ and $f\#_5$ in bar 17 and thence to $e\natural_5$ in bar 18 and $d\natural_5$ in bar 19. This d may be regarded as transferred down an octave in bar 19 and then slips down a semitone to $c\#_4$ in bar 20. Since the latter note is transferred up an octave in bar 22, we may retrospectively understand a linear connection from $d\natural_5$ in bar 19 to $c\#_5$ in bar 22-3.

(2) a gradual corruption of the diatonic field of *B* through the introduction of chromatic notes in the left hand. These tend to occur in pairs a perfect fourth or fifth apart: b# and e# in bar 17, $g\natural$ and $c\natural$ in bars 17-18, $a\natural$ and $d\natural$ in bar 18. The latter two pairs have the effect of seeming to place the left hand part into the field of *C*. In each case, the chromatic note generates a strong semitonal dissonance, the strongest of which is the chromatic cluster 3-1 occurring at the beginning of bar 19, where $d\natural$, c# and b# clash.

Both processes seem to point to the pitch c# as a resolution; the spelling of the left hand dyad in bar 19 suggests a symmetrical semitonal motion outwards. The "expected" c# comes in bar 20, but only in the upper register and only after an abrupt interruption by a chord which reminds us once again of the b/a# opposition, a rather "Stravinskian" superimposition of an F# major triad over a bass b. Straightforward linear and tonal connections are thus challenged again.

Under the sustained $c\#_4$ in bars 20-22, a "new" motive is announced in octaves. In fact, it proves to be organically related to material already heard. Its shape has been anticipated in the right hand part of bar 15, while the rising fourth $a\natural$-$d\natural$ clearly echoes the appearances of this pair of pitches in bars 18 and 19 and the rising whole-

tone scale from d♮ to a# is an inversion of the principal right hand line of bars 17-19. The sustained $a\#_4$-$c\#_5$ dyad of bars 22-23 forms a local association with the same dyads one and two octaves lower, heard at the beginning of bar 22, and with that an octave higher heard at the beginning of bar 20. This interplay of octaves, combined with the explicit recall of the same dyad as that used in bar 4, effect a transition back to the *maestoso.*

(iii) *A tempo, maestoso*: bb.24-32

The second *maestoso* passage brings the b/a# opposition back into focus and recalls the opening thematic material, both altered by the effect of the intervening *scorrevole*, and, in several cases, condensed into harmonic form. During bars 24-27, the note b is made to appear subordinate to a#, since the latter is sustained in the middle registers, while there is a displaced neighbour note motion ($c\#_6$-b_4-$c\#_5$) above this, doubled in parallel thirds ($a\#_5$-$g\#_4$-$a\#_4$). As mentioned above (p.213)„ the five octave a# in bars 24-5 is coloured by $g\#_1$ and $g\#_4$, this vertical association of g# and a# being a condensed reminder of the melodic motive of bars 11 and 13. The $g\#_4$ is itself made to fall a major second in bar 25 and then to rise in a scalic fashion which parallels the middle voice linear movements of bars 2-10.

The main appearances of the note b in this second *maestoso* are associated with reminders of the "Stravinskian" tonic/dominant chord of bar 20, a form of set 4-14 [0,2,3,7]. Thus, b is not able to assert itself independently of a#. At the end of bar 25, the same pitch-classes are present in as in bar 20, but the recall is much more explicit in bar 30, with a repetition of the exact pitches of that bar, the addition of a

d# completing the "tonic triad" part of the chord and enlarging the set to 5-27 [0,1,3,5,8]. (This set embraces the important 4-26, as is made clear by the omission of b from the sonority after the first beat of bar 30.)

Similarly, the note a# appears locked into certain registral and harmonic patterns, namely its combination with c# in registers which recall its appearances in bars 20 and 22-3. The a#-c# dyad is presented vertically in bars 25, 27, 29 (left hand) and 30 and horizontally in bars 28-9.

Although the passage begins with a resumption of diatonic stability in the field (*B/F#*), the same tendency towards chromatic obfuscation seen earlier begins to cloud the texture, as the *scorrevole* material insinuates itself briefly (bb.27-9). This tendency is seen first in bar 27 with the addition of a d♮ neighbour to the c# of the semiquaver motive of bar 26. In contradiction of this, the rising chains of perfect fourths and fifths in bars 27-9 (note again the use of set 4-23) generate the pitches d#, e# and b#, thrusting the diatonic field sharpwards to *C#*.

The restoration of b♮ in bar 30 immediately cancels this out, but the progress from bar 30 to 31 introduces the most complex set of thematic, intervallic and linear relationships so far. The $a\#_5$-$c\#_6$ dyad of bar 30 is associated with the $e\#_5$-$g\#_5$ of bar 31, producing a form of set 4-26 at t_7 with respect to the parallel passage in bars 2-4. The $f\#_5$ and $c\#_6$ are transferred down an octave from bar 30 to 31 in a manner which clearly recalls bar 6. The notes of the $d\#_3$-$f\#_3$ dyad in the left hand proceed to their chromatic neighbours $d♮_3$ and $g♮_3$ in a fashion characteristic of so much of the work's voice-leading thus far and clash against the $f\#_4$ and $c\#_5$ of the right hand, producing a form of set 4-8 [0,1,5,6], whose possible partitioning of ic1+ic1 or ic5+ic5 symbolize the intervallic tensions of the music. The left hand d_3 falls to b_2 at the end of bar 31,

bringing to mind once more the thematic importance of ic3, but, ironically, this last b of the passage is unable to establish itself as a tonic here. Despite its position as "bass note", the sonority above it is so dissonant and self-contradictory in terms of diatonic orientation that any sense of tonal function is cancelled out.

(b) *Scorrevole*: bb.32-82

The remainder of the "first subject" will be examined in a less exhaustive manner, focusing on processes that stretch across the whole passage. The following topics will be examined: register and linear motion, tonality and diatonic field, and thematic processes.

(i) Register

Essentially, the *scorrevole* is constructed as a series of rising waves, each one cresting with a more powerful climax than the last. Thus, despite the continuing importance of thematic, harmonic and tonal developments, it is the element of register which is the most potent shaper of musical form. This foreshadows Carter's approach in some later works, for example, the *Adagio* section of the First Quartet.

These "waves" are: (i) bars 32-5, (ii) 36-43, (iii) 44-50, (iv) 51-64 and (v) 65-79. There is a clear progression in terms of length and complexity from section to section and also a greater sense of dynamic force at successive climaxes. The first wave achieves a $c\#_7$, played ***f*** at the end of a crescendo (b.35). The second does not reach so high, but has greater sonorous weight, as it climaxes with a three octave b#,

accented at the end of a *crescendo* from ***f*** (b.42).

The third wave is more complex, since the registral, dynamic and tonal climaxes are slightly displaced from one another. The actual melodic high point is the $d\#_7$ of bar 49, but the dynamic climax (an accented ***ff***), marked by the rising semitone from $d\#_6$ to e_6 on the down beat of bar 50, is displaced down an octave. The avoidance of e_7 here makes its appearance at the subsequent climax (b.63) all the more telling. However, the progress from d# to e is not the end of right hand's rushing scalic line, whose momentum carries it through to another, more important, semitonal motion, that from $a\#_5$ to b_5 (again transferred down an octave). This melodic climax is the first of the series to be combined in counterpoint with thematically significant material in the left hand part, which here plays a distorted version of the a#-a#-g# motive of bars 12-13. (The tonal and harmonic significance of this will be discussed below.) The fourth climax is prepared by an extension of the material used in the build-up to the third (compare bb.47-50 and 58-62), taking place through a five bar continuous *crescendo* to an accented ***sff*** (b.63). Here, for the first time, the extreme bass and treble registers are combined, as e_7 and e_6 in the right hand coincide briefly with the sustained c_1 and c_2 of the left.

The last of these five waves is rather different in construction from the first four. The established pattern of the previous waves has been a gradual ascent to a combined registral and dynamic climax, after which there is a rapid descent, but in bars 65-79, the centre of gravity shifts emphatically to the bottom of the final descent. The melodic high point of the last wave is the $e\flat_7$ of bar 74, but this only appears at a dynamic level of ***p***, after which, there is a gradual *crescendo, tornando al Tempo I* and an increasingly precipitous descent to the accented ***ff*** triple octave c in the extreme

bass register in bar 79.

(ii) Linear motion

An essential characteristic of the *scorrevole* material is its fluent and constant metamorphosis between different types of scalic and arpeggiated figuration which form the content of the textural waves described above. On the local level, these are used to create simple quasi-tonal voice-leading patterns, for example, the a#-b#-a# neighbour note figure of bars 33-34, or the octave coupling, subdivided by arpeggiation through the fifth, of the right hand part in bars 36-39. As was discussed in Chapter 6, however, attempts to discern similar processes operating on a "middleground" level are fraught with difficulties unless one accepts the model of an associational, rather than prolongational middleground. Bars 40-44 offer an interesting case: a linear process of rising semitones can be heard, linking the notes at the beginning of each bar - b♭ -b♮ -b#-c# - despite the abrupt disjunctions of register and diatonic orientation. However, it is questionable whether this progression represents an "unfolding" of the minor third a#-c# (which was of such importance in bb.25-30) since the beginning and end of the progression do not appear harmonically related.

Middleground linear associations in this passage are most obviously formed through repetitions, allied with contextual factors such as register, harmony and rhythm. Associations between pitches in the uppermost register are simple enough to construe. In the lower and middle registers, however, the sense of line is frequently challenged by registral fragmentation and tonal ambiguity. For example, in bar 51,

the $d\natural_5$-$c\#_5$ melodic cell in the upper voice appears to present the former as the neighbour of the latter. Althought the d "resolves" locally to c# , a "middleground" quasi-sequential pattern over the next few bars suggests that the d_5 is the initial pitch of an ascending linear progression. This rises a step to e in bar 52, and thence through f#, g# and a# to b_5 in bar 56, although this overall rising line involves much retracing of steps. Similar processes unfold in the lower registers, but with progressively less clarity the lower we look. The $c\#_5$ rises half way through bar 52 to $d\#_5$, where it remains until bar 56. Beneath this, there is a great degree of ambiguity: at the bottom of the right hand part, it is difficult to establish whether the $d\natural_4$ and $f\#_4$ in bar 51 are part of the same or different contrapuntal voices. The presence of the pitches $e\natural_4$ and $g\#_4$ in the corresponding places in the next bar seems to indicate the latter, but the figuration soon changes, so that the impression of a progression in parallel major thirds gives way to an irregular rotation of the pitches $f\#_4$, $g\#_4$ and $a\#_4$. In the left hand, the $d\#_4$ in bar 51 conflicts with the $d\natural_4$ in the right hand, but again, it is difficult to hear it unequivocally either as a neighbour note to the $d\natural_4$ or as a displaced neighbour to the $e\#_3$. The $d\#_4$ is repeated twice in bars 51-2 and then seems to rise to e_4, after which, this register is abandoned until it is recalled by the e_4 of bar 54 and the $d\#_4$ of bars 55-6. At the bottom of the left hand part in bars 51-2 enharmonic notation is used to underline a similar effect of ambiguity of line. The notation $e\#_3$, $g\natural_3$ in bar 51 implies an incompatibility of diatonic field between these two pitches, whose main function seems to be as destabilizing chromatic neighbours to the f# in higher registers. However, in bar 52, $f\natural_3$, $g\natural_3$ and $a\natural_3$ are assembled into an ascending line, establishing some coherence in this register, but still conflicting strongly with the content of higher registers in terms of diatonic field. This register

then becomes the locus for a gradually descending process, leading through $g\#_3$ in bars 52-3, $g\natural_3$ in 53-4 and $f\natural_3$ in 54-5 to e_3 and $d\#_3$ in 55-6, although the staccato articulation and frequent interruptions and octave displacements militate against a straightforward linear interpretation.

To summarize the above description, it will be seen that the texture of the *scorrevole* is difficult to reduce to a simpler voice-leading model with a consistent number of parts and relationships between these parts. A principal voice may be detected, usually in the highest register, but the rest of the texture consists of isolated groups of notes which may form themselves into scalic clusters or fragmentary lines, often conflicting rhythmically and harmonically with one another and with the principal voice.

In the later stages of the passage (from b.51), as the harmonic context becomes more chromatic and dissonant, the linear process in the uppermost voice becomes the leading agent of coherence. The most important aspect of this line is the play on the relationship between d and d#/e♭, exploiting the uneasy tensions between neighbour notes which was generated in the movement's first phrase. The progress from $d\natural_5$ to b_5 in bars 51-6 has already been charted. From thence, a clear continuation of this line can be discerned, with the principal pitches highlighted through registral extremity and octave doubling. The line leads through $c\#_6$ in bar 56 and $d\#_6$ in bars 57-8, this movement being reproduced an octave higher in bars 59-60. In bar 61, the $d\#_7$ is reinterpreted as $e\flat_7$ as there is a shift in diatonic field, and this pitch is brought into direct conflict with $d\natural_{5/6}$ in the left hand. This conflict continues into bar 62, where the dissonance between these two pitches is most explicitly presented, the right hand $d\natural_{6/7}$ clashing with the left hand $d\#_{5/6}$. The pressure of this dissonance is relieved by the

climactic e♮$_{6/7}$ in the right hand in bar 63. In the rapid collapse of this registral wave (bb.63-4), d♮ is absent and the ascendancy of e is short lived as it is drawn back to its lower neighbour d# (see e_4-$d\#_4$, left hand, bb.63-4, and $d\#_5$-e_5-$d\#_5$, right hand, b.64).

Within the last of the five registral waves, the enharmonic reinterpretation of d# as e♭ in the uppermost textural line continues to be of central importance. Once the issue is resolved in favour of e♭, there is a descent, akin to a Schenkerian Fundamental Line, through d to c. D#/e♭$_5$ is established as the focal note in bars 66-70 through repetition, accent and metrical placement, though it lacks consonant support. Once again, there is much interplay of neighbour notes; at first, in the rather static passage from bars 66-68, $c\#_5$ is frequently used as lower neighbour to $d\#_5$. Below this, other neighbour relations are heard, mimicking the upper voice ($c\#_4$-b_3 and $a\#_3$-$g\#_3$ in the right hand, while the left hand has the same an octave lower). There are also more dissonant semitonal neighbour relations, between d♮$_4$ and $c\#_4$ in the right hand and $b\#_2$ and $c\#_3$ in the left, which disturb the diatonic stability of the passage. With the replacement of $d\#_5$ by e♭$_5$ in bar 69, the upper neighbour f♮$_5$ comes into play. The insistent repetition of the figure e♭$_5$-f♮$_5$ in bars 69-70 is underlined by its simultaneous inversion c_5-b♭$_4$ and leads to the continuation of the upward movement by the establishment of g_5 in bars 70-71. From this point, the upward reaching movement becomes more dynamic. G_5 is established as a temporary point of focus through its repetition at the beginning of bars 71, 72 and 73, each time supported by c_5 and d♭$_4$ or d♭$_3$. Each repetition is the starting point for an upward rising motion, reaching progressively higher (a♭$_5$ b.71, b♭$_5$ b.72, c_6 b.73). In bars 73-4 there is a much more rapid ascent to e♭$_7$, the first time this register has been sounded since bars 59-63, but as has already been stated, this brief melodic high-point

does not serve as the climax of this section. From here the process of descent begins. The e♭$_7$ is immediately transferred down two octaves and reaches d_5 in bar 75. Octave displacement of the d takes place in both directions in bar 76, but in the *Tempo I* (bb.77-8) there is an accelerating drive downwards, each successive descending figure in the right hand being more compressed (7 semiquavers, then 5, 4 and 3) and reaching lower until c_3 is achieved in bar 79. In the last group of semiquavers in bar 78 there is an encapsulation of the overall descent e♭-d-c of bars 74-79.

(iii) Tonality and diatonic field

Tonally and harmonically, the overarching processes of bars 32-82 are the destabilization of diatonic fields on the sharp side of the cycle of fifths, associated with a tonal centre of b, and their replacement by flat-side diatonic fields, associated with c. The pivotal role of d#/e♭ in these processes will already be evident from the preceding discussion, although other enharmonic relationships, for example f##/g♮, b#/c♮ and a#/b♭, are also crucial.

Within the first section of the *scorrevole* (from bar 33 until the climax in bar 50) there is no non-diatonic dissonance, and so the sense of diatonic orientation, while not static, is always clear. The section begins with a passage unequivocally in the diatonic field *C#* (bb.33-6), resolving the extreme ambiguity of the previous chord, and then shifts gently to *G#* in bars 37-9. The frequent repetition of a# and d# tends to make these notes sound like dominant and tonic, a relationship made especially clear in the sequentially rising melody of bars 36-9. The fourth repetition of this sequential phrase in bar 39 leads to the first abrupt shift of field in the passage. The expected

e# and a# are respelled as f♮ and b♭, leading to a brief appearance of the field *F*. The simple device of repeating this passage up a semitone in bar 41 restores the field to *F#*, while the b# in bar 42 suggests that *C#* has been confirmed as the goal of this section.

From this point until bar 50, there is a gradual tendency to shift flatwards. The gently unwinding semiquavers of bar 43 take us imperceptibly through *G#*and *C#* to *F#* and in bar 44 the material from bar 36 is repeated transposed down a tone, so that the music continues in this field. *F#*prevails until the introduction of e♮ in bar 48 causes a shift to *B*. Although the field of bars 44-50 remains quite stable, the sense of tonal focus within this passage is ambiguous; f#, g#, c# or d# could all be heard as tonally significant. Eventually, however, with the shift to the field *B* and the shaping of the right hand line into an ascending scalic pattern from bar 48 onwards, the note b begins to exert an attractive force but, as discussed above, the attainment of this melodic goal in bar 50 is undermined by other factors. Notably, at this point, the pitches $g♮_{3/4}$ are introduced in the left hand, contradicting the prevailing diatonic field and, through their combination with d# and a#, suggesting a rival tonal centre of d#/e♭.

Bars 51-64 are the most tonally unsettled thus far. The g♮ introduced so forcefully in bar 50 brings in its wake many other chromatic contradictions of the field *B*; d♮, g♮, a♮ and f♮ are all heard in bars 50-55, creating a high level of dissonance. These accidentals are briefly purged from the texture in bars 56-7, which return to the field *B/F#*. In bars 58-9 there is a return of the material of bars 48-50, including the prominent g♮ (now appearing an octave lower), later respelled as f## taking the music into the field of *G#* in bar 59. From bar 60, the diatonic field of the left hand part

plunges dramatically flatwards to *C*, while the right hand part, having attained d#$_7$ in bar 60, adopts the enharmonic notation e♭ in bar 61 in order to try and accommodate with the left hand, thus briefly producing a field of *c*. As the passage moves towards the stark confrontation of the pitches d♮ and d#/e♭ in bars 61-2, the actual tonal status of these two notes becomes uncertain. However, in bar 62 g♮ returns once more, this time stretching down across four octaves, and acts as a quasi-dominant to c♮, which appears for the first time as a harmonic goal in bar 63. The "C major" sonority of the downbeat of bar 63 is extremely short-lived as the diatonic field of the right hand part reverts to *B*, while the left hand c♮ is recast as b# in bar 64.

Bars 65-68 present a situation similar to that of 51-55; the harmonic field is quite static, but full of semitonal tensions, the basic field of *B* being contradicted by the insistent presence of d♮$_4$ and b#$_2$. An abrupt change of field is brought about in bar 68, through the pivotal exchange of d# for e♭, and is confirmed by the change of key signature to four flats in bar 71. Although *A♭* is the prevailing field here, the frequent incursion of a♮ and d♮ in bars 70-73 unsettle the diatonic stability of the passage. This destabilization is exacerbated in bars 74-6 as the field is subjected to flatward changes (c♭$_3$ and f♭$_{3/4}$ appearing in the left hand part) at the same time as the sharpward alterations become increasingly prominent (d♮$_{4/5/6}$ appearing in the right hand and g♮$_{1/2}$ in the left). In the *Tempo I* (bb.77-79), diatonic stability is almost completely dissolved at first as the diatonic field plunges kaleidoscopically through the flatward tending cycle of fifths from *F* to *F♭*.

The appearance of c♮ in bar 79 as "terra firma" after this chromatic landslide is almost arbitrary in effect. Although the sonority of the extreme bass register has already been associated with the quasi-cadential bass g-c in bars 62-3, any connection

between that point and bars 78-9 must be regarded as a psychological association rather than a tonal prolongation. The paradoxical relationship between a weighty cadential gesture and a chromatically saturated harmonic context which Carter creates here continues to be a theme of the "second subject" (see previous discussions of bb.83-4 and 101-2). Bars 79-82 encapsulate the tonal process of the whole of the preceding section in several ways. Although they could be read as "I-V in c minor", the spacing and voicing of the harmonies emphasize other linear and harmonic relationships. The emphasis on the note b within the "G major" chord and the use of the three lowest registers in bars 79 and 81 for the notes c and b recalls the importance of the semitonal neighbour-note relationship between b and a# in the work's opening page. The absence of g♮ from the "c minor" chord of bar 80 throws emphasis on e♭, thus underlining the importance of this note as a pivot in the diatonic orientation of the preceding passage. Finally, the septuplet flourish in bar 81, which superimposes two diatonically incompatible ideas (the cycle of fifths segment 4-23 in the right hand and a G major triad in the left), is emblematic of much of what has gone before: the clash of chromatic neighbours (b♭-b♮, d♭-d♮-e♭, a♭-g♮, the first of these relationships being of greatest significance), the emergence of diatonic stability out of chromatic chaos, and the thematic importance of set 4-23.

(iv) Thematic processes

The *scorrevole* between bars 32 and 82 is typical of much of the Sonata in that its thematic material is subject to continual development of melodic and rhythmic shape to the point that its characteristics are liquidated into a freely evolving stream.

The most important thematic ideas are (i) the repeated note and falling major second, with its associated lombardic rhythm, first heard in bars 12-13; (ii) an upward thrusting motive consisting of an anacrusic perfect fourth followed by a whole-tone scale segment, sometimes concluding with a minor third; (This idea has been heard in its "definitive" form in bars 20-22, but was presented embryonically in continuous semiquavers near the opening of the first *scorrevole* in bar 15. Both versions are subsequently used.) (iii) the pentatonic motive first heard in bars 36-9, which has prominent rising fourths in common with (ii) and falling major seconds in common with (i). Although (iii) is the first new idea heard in the passage and is ostensibly its "main theme", the other two ideas play a crucial role at climactic moments. It will be observed as a general point that all three ideas lose their distinctive shape and are absorbed into the stream of linear and rhythmic invention as the passage progresses.

The succession of "waves" described previously meshes closely with Carter's treatment of thematic material. The brief first wave (bb.32-5) begins with a reference to (ii) as it appeared in bar 15 and links this with the descending major second of (i) ($a\#_6$-$g\#_6$ in b.34). Towards the end of bar 35, the irregular rhythmic grouping of three and five semiquavers anticipates (iii).

Idea (iii) functions as the starting point for the second and third waves. At the beginning of the second wave, it is presented in a simple two-part counterpoint against running scales in the left hand. Its boldly confident character is enhanced by the conventional tonal device of repeating its opening five-note motive transposed alternately up a fifth and a fourth. However, the rising optimism of this gesture is somewhat undermined by the gradual *diminuendo*, which eventually leads to the *piano* return of (ii) in the disoriented diatonic field of *F* in bar 40, a return which flows

naturally from the fact that both (ii) and (iii) begin with the same interval. The immediate repetition of (ii) in a more characteristic field (*B*) and manner of articulation (*forte marcato*) restores the outgoing character of the passage and leads to the climactic $b\#_{3/4/5}$ of bar 42, after which, a long tail of semiquavers is formed in bar 43 through liquidating ideas (ii) and (iii); the first three notes of this "tail" are the concluding notes of (ii) and this overlaps with notes 3, 4 and 5 of (iii), which is then repeated in descending sequence, culminating eventually in a simple b major arpeggio.

The third wave begins in a similar fashion to the second, but idea (iii) is almost immediately subjected to development of its rhythm and contour, leading in bars 46-7 to a repeated downward arpeggio. Under this, attention is drawn towards the left hand's scalic semiquavers, which begin to form a rising pattern. In the lowest voice of the texture in bars 46-7 (stems down, left hand), there is a suggestion of the shape of idea (ii) (d#-g#-a#-b). In bars 48-50, the scalic figures break through to the top of the texture, pushing the wave on to its climax. The chordal material beneath it in the left hand makes use of the rhythm and pentatonic content of idea (iii) in bar 49 and caps this in bar 50 with a *fortissimo* distortion of idea (i), its rhythmic shape made irregular and its descending interval stretched to an augmented second.

In the remainder of the passage, thematic identity is eroded by the practically continuous stream of semiquavers. In the fourth "wave" (bb.51-64), the themes struggle to reassert themselves but are abandoned at the climactic point, while in the final "wave" (bb.65-82) there is only the most fleeting reference to them. The fourth wave begins with a two note motive in the uppermost voice (the descending minor second d_5-$c\#_5$). The thematic significance of this motive is at first enigmatic, but it is developed during bars 52-5 by expanding the interval to a minor third and

incorporating other notes, so that by bar 56, it has recognizably become a new version of idea (iii). This point coincides with the attainment of the dynamic level *mf* and the restoration of the field *B*. However, this point of arrival is swiftly passed over as there is a return in bar 58 to the thematic and textural situation of bars 48-50; this time, the right hand semiquavers push up to a greater registral extreme, while the left hand unfolds a melodic line in *marcato* octaves which amalgamates ideas (iii) (bb.58-9), (i) (b.60) and (ii) (bb.60-61). The last of these is the most forceful statement of this idea thus far and coincides with the critical harmonic clash between d♮ and d#/e. , but the actual climax in bars 62-3 consists only of the rushing semiquavers over a cadential bass.

The beginning of the final wave (bb.65-70) is similar in texture and content to that of the fourth. Intervallic fragments of thematic material are animated by irregular rhythmic groupings within the *perpetuum mobile* of semiquavers, the most prominent intervals being the minor third, perfect fifth and major second. In the *Meno mosso*, more continuous melodic lines begin to evolve, but there is no reference to the main thematic material, apart from the use of some of the rhythmic features of idea (iii) to animate the repeated d♮ in the right hand in bars 75-6.

(c) Summary

This passage clearly shows the interaction between traditional and radical approaches to form-building in Carter's transitional work. The tonal process of sonata exposition, in which the stability of the tonic is undermined, leading to its replacement by the dominant, has an analogy in the replacement of b as tonal centre

by c and the reinterpretation of the major third d# as the minor third e♭. However, the stability of b is called into doubt from the outset of the movement, so that a further level of complexity, involving the relationship between b and a#, is created. Furthermore, the means by which tonal centres are established are more tenuous than in conventional tonal harmony. The reservation of the extreme bass register for pitches of focal importance is Carter's most obvious and effective technique in this passage. Linear patterns play some part in the connection of these pitches, although "middleground" associations over longer stretches are relatively weak and relationships between neighbour notes are more often exploited for their potential to undermine rather than confirm the pull of a tonic. In the absence of fully functional key and voice-leading relationships, the looser principles of diatonic orientation operate; pitches will tend to seem more stable points of focus if any dissonance in the surrounding harmonic context can still be accounted for as diatonic. The thematic process of statement, development and recurrence can be observed, but is challenged by Carter's tendency towards continuous evolution. Above all, the form-defining role of texture is apparent here, foreshadowing the composer's later development.

CHAPTER 9: SONATA FOR CELLO AND PIANO, SECOND MOVEMENT

1. Genre and Character

Carter's Cello Sonata is a crucial work in the development of the composer's mature style. It ushers in a phase in which conventional approaches to musical time and space are rejected in favour of more experimental strategies. David Schiff's study of Carter's works revealed that the movements of the Sonata were conceived in the order II, III, IV, I and suggested that the work "evolved as it was composed" [Schiff: 142]. The first movement has therefore received the greatest attention, being most representative of the musical language of the later Carter. However, for the purposes of illuminating the transitional character of Carter's musical language during the late 1940s, the second movement may prove an equally rewarding subject for study, representing as it does the point from which Carter was to launch his change of direction.

The movement's status as a significant "end-point" is symbolized by the often-remarked fact that it is the last of Carter's works to bear a key-signature. The relationship between the expectations arising from the employment of key-signatures and the actual harmonic language of the piece is, therefore, an obvious starting point for discussion. Certain aspects of the movement's form and genre are also representative of the earlier, more conventional Carter; the ABA'(+coda) formal outline and the scherzando character of the main body of the movement (indicated by the tempo marking *Vivace, molto leggiero*, the lean texture, the frequent use of pizzicato and the incorporation of jazz-derived syncopation) place the movement firmly

in the generic category of "scherzo and trio".

Conversely, other features of the work's harmonic language and formal processes indicate the new directions in which Carter was beginning to move; the avoidance of conventional tonal sonorities and progressions, the "motivicization" of harmony and the continual evolution of musical material during the course of the movement adumbrate later developments in the composer's musical language.

The basic formal outlines of the movement are easily identified; double bar lines, combined with changes of metre, tempo and key signature are the outward signs of a ternary structure;

A: 1-57 (5♭ , 2/2, 𝅗𝅥 =84)
B: 57-129 (1♭ , 6/8, ♩. =112)
A^{1} (+coda): 130-213 (2♭ , 2/2, 𝅗𝅥 =84)

As is characteristic of Carter's music, the sections are not closed and separate, but run into one another; bars 51-56 constitute a transition, as do bars 123-130, the latter beginning with a repetition of the material of bar 1. The **A** and **B** sections are contrasted in texture and character, but in the final section of the movement, elements of the more violent and sinister **B** section affect the light, playful tone of the material of the **A** section. In the coda (which may be regarded as beginning in bar 186, after the movement's main dynamic climax), material from both sections is brought into close conjunction and motivic connections and similarities which have been hinted at during the course of the movement are made explicit. It would be wrong, however, to regard this as a straightforward synthesis or resolution; the expressive character of the middle section is so forceful that it tends to dominate and undermine the scherzando tone of the first section of the movement . The sense in

which the issues of the movement remain unresolved is connected with the cyclic process of the Sonata as a whole; the impassioned tone of the **B** section of the movement is carried over into the succeeding slow movement, the connection in terms of tempo and motive between bars 203-4 of the second movement and bar 1 of the third being a concrete sign of this relationship. Similarly, the fast moving scalic figuration of the more agitated passages of the slow movement gives rise to the material of the turbulent finale. A sense of resolution is only achieved at the end of the latter by a return to the enigmatic, emotionally "neutral" material of the opening movement.

As can be seen by reference to the ABA^1 formal outline of the second movement, the proportions of the ternary structure are not balanced and symmetrical, but are dictated by patterns of growth and development. Two approximately equal sections are followed by a much longer third. This final section is far from being a straightforward recapitulation; very little material from the **A** section is restated literally, some is restated with minor modifications and much that was originally only briefly stated receives extensive new treatment. Some material does not reappear at all, resulting in an unusually high degree of "redundancy". (For example, the passages from 15-21, 27-35 and 45-56 in **A** have no equivalents in $\mathbf{A^1}$.) Thus in terms of both genre and structure, the movement evinces a degree of tension between the convention of "scherzo and trio" and Carter's more fluid approach to form.

A further aspect of the movement which requires consideration is the relationship between the two instruments. The opening movement sees the first crystallization of Carter's technique of counterpointing opposing instrumental "characters". Its texture "is concerned with mediation between relative dissociation

and relative association" [Whittall 1988: 221]. The second movement, although less sharply focused, also explores a range of possible relationships between the instruments. Musical material is shared between the instruments almost equally; for example, the movement begins with the piano imitating the cello's opening gesture (although the contrast between the capabilities of the instruments is emphasized in this case as the piano transforms the cello's single pitches and dyads into dyads and trichords.) In particular, Carter exploits the timbral similarity between the sharp staccato attack of the piano in the low and middle registers and the pizzicato of the cello. This is first heard in the passage of intertwining two-part counterpoint in bars 3-10, but receives its most extended treatment in bars 136-140, where the two instruments divide a single melodic line and the piano is actually marked "*quasi pizz.*". The high point of "association", however, is seen in bars 167-170, where the texture consists of a single melodic line presented in three registers, the cello occupying the middle register and the right hand of the piano rhythmically displaced by one quaver to create a heterophonic effect. Maximum "dissociation" occurs when the instruments revert to type, the cello playing "*cantabile espressivo*" lyrical lines, while the piano has more fragmentary, faster moving material (for example, in bb.17-20). The final stages of the movement also tend towards dissociation in that the instruments are heard separately more frequently than in the rest of the movement; there are three "solo" passages (for cello in bb.191-194, piano in bb.194-196 and cello again in bb.210-213), the last three and a half bars being the longest unaccompanied stretch of the movement. Bars 204-207 represent an uneasy balance of associative and dissociative factors; the main thematic material of **A** (in the piano) and **B** (in the cello) is superimposed, the contrasting thematic characters and instrumental sonorities being

offset by the attempt to accommodate them both into the same metrical, harmonic and textural framework.

2. Form and Thematic Process

The following is an informal description of the second movement's thematic material and its surface continuity. This will be a necessary preliminary to the more detailed analysis of its musical language. Charting the movement's progress through the appearances of its main thematic material will help to demonstrate both the degree to which conventional thematicism plays a controlling formal role and the degree to which it is challenged by other factors. Any attempt to deduce a large-scale tonal plan or background contrapuntal structure must be reserved until the complex issues of harmony have been addressed.

As in most of Carter's music of this period, the musical material of this movement evolves freely from a handful of brief motives which are instantly recognizable through distinctive melodic and/or rhythmic features. Some of these remain almost unchanged, while others may undergo extensive alteration.

A (bb.1-57)

Example 9.1 shows the main motives from which most of the material of the section is derived. Motive (i) is sharply characterized by its initial wide downward leap and syncopated rhythm. Its concise first presentation by the cello is imitated and expanded by the piano in bars 2-3, providing the starting point for an opening

paragraph in which other important motives gradually evolve. In bars 15-16 two further variants of (i) in the cello begin the next paragraph. The piano part of bars 23-34 may also be derived from (i) (this is most clearly seen in 25-27 and 30) although as the section progresses, the resemblance to the original form fades. The motive's status as an initiator of action is confirmed at other important points in the movement; for example, a suggestion of (i) in the piano in 50-51 begins the transition to the **B** section; its literal restatement in the cello in 123-4 heralds the beginning of the retransition to $\mathbf{A^1}$ and the beginning of $\mathbf{A^1}$ itself takes the form of overlapping variants of (i) in both instruments. Motive (ii) grows from the descending minor third in bar 3 (piano, 2nd and 3rd beats). This also has a prominent role as a punctuating device, particularly as a climactic end-point (see bb.7, 10-11 and 35-36). A rearrangement of the paired minor thirds of motive (ii) produces motive (iii) (piano right hand, b.12). This appears only briefly in **A**, but subsequently plays a dominant role in $\mathbf{A^1}$.

The remainder of the material of the **A** section may be divided into two basic types of articulation, staccato and legato, the former tending to appear in continuous quavers often in quasi-scalic or arpeggio patterns (for example bb.5-9; this is the type of material in which the timbral similarity between the instruments may be exploited). The latter first emerges in the piano in 12-13, but appears most characteristically in the cello with the marking "*cantabile espress.*"(for example, in 17-20, 22-24, 27-34). The rapidly varied combination of these contrasting types of material contributes to the scherzando character of the section, while the pervasive syncopation (deriving from motive (i)) lends it a jazzy "American" character, which, according to the composer, is intended to be parodic [*CEL*: 230].

Formally, **A** progresses from small fragments to longer, more continuous

passages which tend to end with an abrupt breaking-off. In bars 1-14, for example, a one-bar cello phrase is imitated and expanded by the piano in the next two bars, and gradually grows towards a four bar phrase for both instruments in 11-14. This opening paragraph is punctuated by three abrupt cut-offs (bb.7, 11 and 14) each one more violent than its predecessor. A second paragraph begins in bar 15, during which the legato material which first emerges in bars 12-13, tends to appear in longer stretches and resemble conventional melodic structures more closely. The cello line in bars 15-35 might be analyzed in terms of balanced, periodic phrasing as follows (also see Ex.9.2):

15-24: "antecedent" (15-20) + "consequent" (21-24)
2(1+1)+2+2 2+2
27-35: "antecedent" (27-31) + "consequent" (32-35)
3+2 2.5+1.5

This scheme, of course, only expresses a partial truth. The sense in which each of the "consequent" phrases is conclusive is severely compromised by the typically abrupt endings (bb.24 and 35). Furthermore, the lack of obvious closural attributes in the harmony, the evolutionary nature of the melodic growth and the incompatible phrase structure of the piano part conflict with the nature and the substance of this division.

The climax in bars 34-37 is the most forceful up to this point and introduces the most fully developed statement of motive (ii) so far heard. From this point, the tail of the motive (the descending third b♭ -g) is incorporated into a new melodic idea which comes close to a conventional sentence structure occupying, fourteen bars (see Ex.9.3).

The remainder of the section (bb.51-57) consists of a transition to **B**. Its transitional character is indicated by insistent repetition, especially of the minor thirds of motive (ii). The persistent rhythmic irregularity of **A** is now pressed into recurrent patterns in the cello, first of three quavers and then of two (the increase of pace hastening the progress towards the junction of the sections - see Ex.9.4).

B (bb.57-129)

A straightforward metric modulation, which maintains the speed of the quaver, relates the tempi of the **A** and **B** sections through the ratio 3:4. However, the rhythmic characteristics of the two sections are sharply contrasted; while the **A** section relies on the essentially conventional device of syncopation within an *alla breve* metre, the **B** section exploits a more complex technique - a polyrhythm of 3:5. (The more conventional device of hemiola is also used.) Example 9.5 shows the section's main material; (iv) quintuplet quaver figures, either on repeated notes (cello, bb.57-62, 106) or as a tremolando (mostly on a minor third: piano, bb.64-66, 113-116 etc., but also on perfect fifths and fourths: piano, bb.68-71, and minor ninths: piano, bb.76-80); (v) an expressive legato melodic line, mainly moving in dotted crotchets, and deriving from the *Dies Irae* - like motive stated in the piano in bb.61-62; (vi) a five-quaver motive, first heard in bar 60 (piano RH), which undergoes various transformations and generates much new material, both in this section and in the remainder of the movement.

The character of **B** is in marked contrast to that of **A**. The scherzando tone gives way to a rather more unstable temper. Extremes of register are explored (the

piano's rise into the "stratosphere" in 68-73 is counterbalanced by the cello's plunge into the depths in 79-85) and there is a wide range of textural contrasts, from the bare octaves of 74-75 to the dense 5-or 6-part harmony of 113-117. There are sharp mood swings from the delicacy of 68-82 to the violence of 95-112. There is, in short, an air of unpredictable fantasy which is far-removed from the nonchalant mock-popular idiom of the previous section.

Whereas **A** shows a relatively conventional formal tendency towards greater continuity and evolutionary growth, **B** tends towards dissolution or fragmentation of texture and liquidation of thematic material. Twice during the course of the section, the thread of continuity runs very thin; firstly, in bars 68-73, the texture becomes extremely rarefied, as the piano line "evaporates" with a succession of oscillating perfect fifths ascending to the highest register, while the cello line is gradually fragmented, ending with an isolated $c\#_5$ in 70-71; secondly, in bars 105-112, at the opposite dynamic extreme, after a passage in which irregularly grouped chordal flourishes have become dominant, all movement in the piano is arrested by a *fortissimo* chord, while the cello has a declamatory solo line. In each case (at bb.74 and 113), momentum is regained with the return of motives (v) and (vi) in conjunction.

A^1 (bb.130-213)

The final section of the movement may be described as a "developing restatement" of the first **A** section. Table 9.1 summarizes the course of the final stages of the movement in terms of thematic derivation and/or cross reference. Passages of literal recapitulation are rare; more frequently, ideas from the first section

Table 9.1: Relationship between material in A and A^1.

Bar nos. in A1	Motivic derivation	Corresponding passages in A: Recapitulation close	Recapitulation altered	Development
130-134	(i)		2-7	
135-136	(ii)		10	
136-140	(ii)/(vi)			8-9/93-94
141-146	(ii)	38-43		
146-149	(iii) (piano)			41/12-14
	(i) (cello)			1
149-150	(ii)	42-43		
150-151	(ii)/(vi)			93-94
151-155	(ii)		38-40/43-45	
155-157	(ii)		42-43	
157-166	(iii)			
166-173	(iii) (piano, cello to 170)			13-14 (piano)
	(ii)/(vi) (cello from 170)			11-12 (cello)
174-177	(ii) (piano)			11-12 (cello)
	(iii) (cello)			13-14 (piano)
177-185	climactic chordal section; distantly derived from (i) and (ii)			
Coda				
186-190		22-26		
190-191				10-11/33-34
191-196	(vi)			93-4
197-203	(iv) + (v)		118-122	
204-207	(v) (cello)			113-114
	(i) (piano)			2-3
208	(ii)/(vi)			
209-210	(ii)		7/10	
210-213	(ii)/(vi)			

are allowed to "have their head" in a succession of climaxes, culminating in the movement's dynamic high-point at bar 185. The music which follows may be regarded as a coda, including recollections of material from both sections, the culmination of which is the simultaneous juxtaposition of forms of motives (i) and (v) in 204-207.

It will be noticed from the table that motive (vi), which is first suggested in bar

60, but which appears in its definitive form in bars 94-5, plays an increasingly prominent role during the later stages of the movement. Its continuous quaver motion clearly relates it to the staccato quaver material of the **A** section. Motive (vi) is recognized through its pitch contour and content, rather than through its articulation or rhythm; in $\mathbf{A^1}$ the characteristic legato articulation of the **B** section is abandoned in favour of the staccato of **A**, thus bringing about a synthesis of sorts. Successive appearances of material derived from motive (vi) are longer. For example, the last two occurrences (bb.194-196 and 190-191) are 23 and 27 quavers long respectively (compared with the 10 quavers in bb.93-4).

Bars 130-140 represent a developed restatement of material from bars 1-14 of **A**, climaxing in the extended development of the pizzicato idea. The material of 15-35 is then omitted. Only in 186-191, after the movement's main climax, is any of this material restated. Instead, $\mathbf{A^1}$ continues with material from the second half of **A** (that shown in Ex.9.4). This appears in a form reasonably close to the original. However, it is interrupted by a development of a complex of motive (i) and an extension of the material of Ex.9.4 and a suggestion of the rhythm and texture of motive (iii) (bb. 146-9), climaxing in another dual motivic statement - (ii) with (vi) (bb.149-151).

The texture and motives of bars 146-9 recur and receive extensive development in 157-173. This passage may be regarded as the "definitive" presentation of motive (iii), which appears explicitly in 166-7, the high point thus far of cooperation between the instruments. From 170, the instruments begin to diverge again, the piano continuing with the material of the immediately preceding passage, the cello running into arpeggio-like streams of quavers, stemming from the material of bars 11-12. In

174-8 the roles reverse, the cello taking the legato material (with another appearance of motive (iii) in 175-6) and the piano taking the staccato quavers. This leads into the climax of the whole movement in 178-185, which, perhaps echoing the texture of 91-112, is primarily chordal and disrupts the rhythmic regularity which had been established in the previous section.

This climax represents the point of furthest remove from the identities of the movement's main motives. This is immediately compensated for in bars 186-189 by a passage of literal recapitulation (compare bb.22-25). The latter takes a new turn in 190 with another climactic statement of motive (ii) recalling that of 34-35. The climax subsides rapidly and is succeeded by two further statements of motive (vi), first for the cello (191-3) then for the piano one octave higher (194-196). The cello statement leads to a low "pedal" dyad of c#-a, over which the piano statement is heard. The latter leads, via a simple metric modulation, to a restatement of material from **B**, the piano part from 199.5 to 203 being a transposition through a tritone of bars 119-122. The previously discussed juxtaposition of motives (i) and (v) follows in 204-7. The final six bars of the movement revert to the metre of **A** and to the characteristic texture of bars 3-8. The piano drops out after bar 210 leaving the pizzicato cello to end the movement unaccompanied in true scherzando fashion. It should be noted that the cello's final bar, outlining a B♭ major triad, is the final transformation of a motive which has evolved gradually during the closing stages of the movement (see the cello part in 178 and 192).

3. Harmony, Tonality and Sets

The harmonic language of the second movement of the Cello Sonata receives attention in the studies by Schiff and Harvey. Two important issues arise from a reading of their work; the nature of Carter's harmonic vocabulary and the overall control of tonal motion. These may, perhaps, be described as considerations of "foreground" and "background" respectively, and interaction between these levels (if indeed any such hierarchic organization can be deduced) opens up a third area for investigation. Schiff's comments are quoted in full;

> Harmonically, the second movement - the last Carter was to write with a key signature - contrasts B major and B♭ minor, an opposition stated in the first two measures. Carter had extensively explored this polarity in the Piano Sonata and *Emblems*; here, however, the fluctuations between keys are far more rapid than before and moments of diatonic simplicity sound ironic rather than affirmative - Carter has described the more tonal parts of the movement as parodies of "pop" music (see bars 37-40 for example). The contrasted tonalities of this movement tend increasingly to combine into chromatic figurations that emphasize the minor third, and in retrospect the listener may note that the apparent tonal opposition is in fact derived from the six-note cell heard at the beginning of the first movement. Minor thirds, often complemented by perfect fourths to form the "key" four-note chord of the Sonata, dominate both the harmonic and thematic materials of the movement. [Schiff 1983: 139-140]

Harvey deals with the movement in a similar manner, describing it as "tonally the most straightforward" of the four and comparable to the composer's earlier music in its use of scale and mode. Harvey finds the "opposition of B and B♭" in the movement links it with the Piano Sonata and the Wind Quintet, the fact that there are notes in common between B major and B♭ minor being exploited to produce an "equivocal" harmonic texture in which "'key' is usually only definable as a property of the scalar relationships of the pitches present at any given moment, rather than as a

function of harmonic relation." [Harvey: 34][1]

These assessments of Carter's harmonic practice require elaboration and qualification. The opposition of the pitches B and B♭ and the keys of B major and B♭ minor is not the central issue that it is in the Piano Sonata. Harvey's assertion that these two keys are juxtaposed at first successively (in bb.1-2) and then simultaneously (for example, in what Harvey describes as a "bitonal" passage in bb.15-25) is suspect; it ignores the presence of the pitches a♮ (in b.1) and c♭ (in b.2), and it confuses the enharmonic notation of bars 15-25 (the cello part being notated in sharps, the piano in flats, but both sharing pitch-class content) with actual bitonality. Similarly dubious is Schiff's statement that the "six-note cell" (6-Z43 [0,1,2,5,6,8]) heard at the beginning of the first movement, is the source of the second movement's tonal opposition.

The basic harmonic building blocks of the foreground of Carter's music are obviously more diverse than the triadic components of traditional tonality. However, as already argued in Chapter 5 (see pp.117-21), in the music of the late 1940s, a clear relationship between the two can be seen; Carter takes the basic intervals of the triad - the third and fourth (or fifth) - and recombines them in more complex formations. Schiff's "Chart 9" of "Harmonic Materials" [:137], shows various intervallic combinations which "are heard melodically and harmonically throughout the work." The six tetrachords which Schiff identifies are said to be "neither thematic [...] nor serial in implication or treatment"; instead, a "chromosomal" intervallic pattern can be detected running throughout the work. This constitutes a rather limited group if it is to be considered the basis of such a wide harmonic vocabulary. Harvey recognizes

[1] The semantic problem of the word "key" may, of course, be bypassed by discussing the harmonic context in terms of diatonic fields.

this in his analysis, which adds three trichords (3-2, 3-3 and 3-4) to the core of significant sets.

However, even this is not sufficiently broad to describe the harmonic vocabulary of the second movement. Schiff's chart identifies four of the possible combinations of ic3 + ic5. One of these, 4-7 [0,1,4,5] which opens the work, is described as the "key-chord". Another of its intervallic properties - it may be formed from a pair of major thirds (ic4 + ic4) - relates it to two other tetrachords which share this property, 4-17 and 4-20. The latter two sets may also be formed from a pair of minor thirds (ic3 + ic3) and a pair of perfect fourths (ic5 + ic5) respectively. This suggests another possible point of departure for reconstructing Carter's set vocabulary for the work. The fact that the tetrachordal pairing of ic3 + ic 5 which Schiff omits from his chart - 4-23 - may also be formed from ic5 + ic5, strongly suggests that the various symmetrical pairings of ic3 + ic3 and ic5 + ic5 should be considered as well as the ic3 + ic5 combinations. The basis of an analysis of the movement's intervallic vocabulary should be a comprehensive categorization of tetrachords formed from the pairing of interval classes 3 and 5. Table 9.2 is abstracted from Appendix 3 and provides such a categorization.

The contents of Table 9.2 represents a harmonic universe in which all interval classes are present, but in which some (ic3 and ic5) have a privileged status. This anticipates Carter's later, increasingly systematic, exploitation of intervallic combinations and his desire to create characteristic intervallic and set vocabularies. It will be noticed that two sets, 4-26 and 4-23, appear in two groups in Table 9.2, thus reducing the total number of tetrachords from 15 to 13. The choice of 13 out of a possible 29 tetrachords may seem rather unfocused in terms of creating a characteristic

Table 9.2. Tetrachordal vocabulary of Cello Sonata, second movement

ic3+ic3

ic and pc structure	set	interval vector
3 4 |3|{ }|3| 0 1	4-3	[212100]
3 5 |3|{ }|3| 0 2	4-10	[122010]
3 7 |3|{ }|3| 0 4	4-17	[102210]
3 8 |3|{ }|3| 0 5	4-26	[012120]
3 9 |3|{ }|3| 0 6	4-28	[004002]

ic5+ic5

ic and pc structure	set	interval vector
5 6 |5|{ }|5| 0 1	4-8	[200121]
0 6 |5|{ }|5| 7 1	4-9	[200022]
5 1 |5|{ }|5| 0 8	4-20	[101220]
5 7 |5|{ }|5| 0 2	4-23	[021030]
5 8 |5|{ }|5| 0 3	4-26	[012120]

ic3+ic5

ic and pc structure	set	interval vector
4 5 |3|{ }|5| 1 0	4-7	[201210]
3 6 |3|{ }|5| 0 1	4-13	[112011]
3 7 |3|{ }|5| 0 2	4-14	[111120]
4 0 |3|{ }|5| 1 7	4-18	[102111]
5 0 |3|{ }|5| 2 7	4-23	[021030]

set vocabulary, but two points should be borne in mind; (i) a form of hierarchy may be demonstrated to operate among the sets, with greater importance being assigned to the symmetrical tetrachords, especially to the multiply symmetrical 4-28; (ii) the "transitional" nature of the work has already been noted - the comparatively "loose" approach to harmonic material in this movement had been refined by the time Carter came to compose the first movement, which selects from this large pool of sets the smaller network represented by the Kh(6-20) subcomplex as its most important constituents (see pp.124-8).

The trichordal subsets of these tetrachords also play an important part in defining the vocabulary; the symmetrical tetrachords may be generated from pairs of inversionally-related trichords as well as from dyads. Table 9.3 sets out the trichordal subsets of the tetrachords of Table 9.2. It will be noted that 3-11 (the major or minor triad) is the most frequently represented, being contained within 5 of the 13 tetrachords and thus perhaps confirming the subliminal influence of the triad on the harmonic language of the movement.

Table 9.3. Trichordal vocabulary of Cello Sonata, second movement

tetrachord	trichordal subsets			
4-3	3-2 (0 1 3)	3-3 (0 1 4)		
4-7	3-3	3-4 (0 1 5)		
4-8	3-4	3-5 (0 1 6)		
4-9	3-5			
4-10	3-2	3-7 (0 2 5)		
4-13	3-2	3-5	3-7	3-10 (0 3 6)
4-14	3-2	3-4	3-9 (0 2 7)	3-11 (0 3 7)
4-17	3-3	3-11		
4-18	3-3	3-5	3-10	3-11
4-20	3-4	3-11		
4-23	3-7	3-9		
4-26	3-7	3-11		
4-28	3-10			

A study of the similarity relations among tetrachords and trichords (Tables 9.4 and 9.5) reveals a few more facts pertinent to analysis of the movement. The "special" status of the "diminished triad" 3-10 and the "diminished seventh" 4-28 is shown by the fact that they exhibit the minimum number of similarity relations among their respective groups. Those similarity relations which do hold pertain exclusively to pitch-class rather than interval class. This is unsurprising since the interval vectors of these two sets are minimally varied with respect to interval class; in other words they maximize ic3 and ic6 at the expense of all others. These sets thus represent the "purest" form of presentation of ic3, which may be regarded as the motto interval of the movement. (Note also that the interval vector of 4-23, the set which maximizes ic5, contains three other ics including one instance of ic3.) The sparing, but structurally prominent uses of sets 3-10 and 4-28 will be noted during the analysis.

The maximum number of similarity relations among the trichords is shared by the "scalic" 3-2 and the "triadic" 3-11 which are in the relation R_p or R_1R_p to all the other trichords. This means that they are less distinctive and hence more flexible than 3-10. Seven out of the thirteen tetrachords contains either 3-2 or 3-11. One, 4-14, contains both, and it is therefore not surprising that this set represents the maximum for similarity relations among the tetrachords.

Carter's music is evolutionary, continuously developing new shapes from basic intervallic constituents. A problem in applying p-c set theory to music such as this is that it tends to treat music as static structure rather than as dynamic process. This problem may be partially overcome be adopting segmentation strategies which reflect

Table 9.4. Similarity relations among tetrachords in Table 9.2.

	4-3											
4-7	Rp	4-7										
4-8		Rp	4-8									
4-9			R2 Rp	4-9								
4-10	Rp				4-10							
4-13	Rp		Rp	Rp	R2 Rp	4-13						
4-14	Rp		Rp		Rp	Rp	4-14					
4-17	Rp	R1 Rp			R1		Rp	4-17				
4-18	Rp	Rp		Rp		R1 Rp	Rp	R2 Rp	4-18			
4-20		R1 Rp	Rp				R2 Rp	R1 Rp		4-20		
4-23					Rp		Rp				4-23	
4-26	R1				Rp	Rp	R2 Rp	Rp		Rp	Rp	4-26
4-28						Rp						

Table 9.5. Similarity relations among trichords in Table 9.3.

	3-2						
3-3	R1Rp	3-3					
3-4	Rp	R1Rp	3-4				
3-5	Rp	Rp	R1Rp	3-5			
3-7	R1Rp	Rp	Rp		3-7		
3-9	Rp		Rp	Rp	R2Rp	3-9	
3-10	Rp	Rp		Rp			3-10
3-11	Rp	R1Rp	R1Rp	Rp	R1Rp	Rp	Rp

the fluidity of the musical surface. In particular, the technique of imbrication will be extensively used since this can show how individual pitches, intervals and small sets are reinterpreted as the music progresses. A pitch, dyad or set which forms part of one grouping may act as a "pivot", combining with another element to form another significant group. This free association of intervals is an important facet of Carter's harmonic practice at the local level.

Bars 91-112 offer a relatively clear example of how this free association of interval classes 3 and 5 operates in the movement (see Ex.5.11 and p.123). Most of the melodic and harmonic activity of the passage derives from the combination of these interval classes in various permutations. This passage is perhaps exceptional in that it presents the harmonic "roots" of the movement in their most concentrated form, as

pairs of dyads combined harmonically or melodically. (The position of this passage - almost exactly half way through the movement and at the climactic point of the **B** section - may be significant from this perspective.) Immediately following it is a passage of denser harmony (bb.113-122) whose 5 or 6 part texture may be broken down into constituents which prove to be similar to those of Ex.5.11 (see Ex.9.6).

A similarly density of motivic harmony arises from the combination of motives (i) and (v) in 204-207 (see Ex.9.7). Here the manipulation of sets and intervals is seen at its strictest. The relationship between the melodic and harmonic dimensions is particularly interesting. The cello has a series of eight trichords, of which, numbers 5-7 are identical to numbers 1-3 while number 8 is a transposition of number 4. Analysis of the intervallic content of these chords reveals a palindromic pattern which uses only set classes 3-4 and 3-11. These trichords are so spaced as to create upper dyads of ic3 or ic5, thus giving rise to several of the work's characteristic tetrachords through the pairing of these dyads. The two halves of the chordal sequence are connected by the "key chord" 4-7. Furthermore, the upper and lower "voices" of this chord sequence spell out various forms of motive (v); the upper voice has set 3-3 followed by 3-5, the lower voice provides 3-2 and 3-3 in counterpoint to this, varying the motive through inversion and permutation of note order. This passage thus encapsulates the "developing variation" of motive (v) which has taken place during the movement, its initial form of 3-2 being expanded to 3-3, 3-4 and 3-5 (see bb.61-63, 67-69 and 74-76). The piano, meanwhile, performs a similar act of integration, its downward octave leap to the movement's "tonic" in bar 204 being a kind of resolution of the major seventh which opens the movement; this is supported by a sustained tetrachord 4-23, which is built form ic3+ic5, but is also diatonic to B flat major.

Segmentation of the harmonic surface of the movement at any point will reveal a similar make-up in terms of the sets described above. However, this establishes only that Carter is working with a consistent vocabulary; it does not provide the syntactic "rules" which enable us to perceive the music as meaningful. Syntax is the area in which the transitional nature of the Sonata is most apparent, in that a single set of "rules" will not suffice to explain how the music is organized. Ambiguity arises from the possibility of deducing different principles of organization from the harmonic materials themselves; the predominance of the "triadic" interval classes 3 and 5 gives rise to a host of quasi-tonal pitch-structures. Reference back to the tetrachords of Table 9.2 shows that a small majority (seven out of thirteen) are subsets of the diatonic major scale (set 7-35). Even more suggestive is the fact that only one tetrachord (4-9) cannot be derived from either the major or harmonic minor scale. This set vocabulary thus possesses the potential to create a harmonic texture which is predominantly diatonic and may therefore also contain allusions to functional tonality.

Tetrachords formed from the dyadic pairing ic3+ic3 have a particularly important role in this respect, since they can be made to resemble parallel triadic motions. Example 9.8 shows some of the occurrences of these sets during the movement. Tetrachords formed from ic5+ic5 have a variety of tonal characteristics; 4-20 and 4-26, for example, are identical with the tonal "major seventh chord" and "minor seventh chord" respectively; 4-23 may be presented linearly to form a "cycle of fifths" progression; 4-8 and 4-9 may be similarly presented, suggesting a "Neapolitan" pattern. These, and other possibilities, are illustrated in Example 9.9 .

However, allusions to particular tonalities and voice-leading patterns are rarely unambiguous. Carter creates harmonic ambiguity through the tension between tonal

function and diatonicism. Tetrachords which might be tonally suggestive in themselves are often placed within a harmonic context which undermines the sense of a fixed tonality. This is the cause of what Harvey describes as the "paradoxical" harmonic nature of the movement. In this movement, however, enharmonic changes are much more frequent and rapid and have fewer implications in terms of tonal function.

The progress of the A section in terms of diatonic fields is shown in Table 9.6. One outstanding feature of the section in these terms, is the gradual emergence of *A♭* as a relatively stable environment in bars 27-50, the composite fields *E♭/A♭* and *A♭ /D♭* being used extensively. This is coupled with some of the clearest references to functional harmony in the movement in bars 37-40, producing a moment of apparent stability (see Ex.6.3(b)).

Another important feature is the "opposition" between sharp and flat orientation. The opening two bars present this opposition immediately; the first 5 pitches of the cello are restated enharmonically by the piano at the beginning of bar 2. The cello dyad e-a, which introduces the "false relation" a♯-a♮ , defines the diatonic field of bar 1 as *B/E.* However, the continuation of bar 2 suggests *G♭* or *e♭*. The

Table 9.6. Succession of Diatonic Fields in A section.

Bar	1	2-8	9-11	12-14
	B/E	*G♭* (or *e♭*) (includes brief movements to *A♭* and *C♭*)	Cello: *C♭- g* Piano: *E - g - B♭-b♭ - g*	*a♭/d♭*

Bar	15-16	17-21	21-22	23-26	27-31	31-35	36-37	38-40	41
Cello	*B*	*C♯*	*E*	*F♯*	*A♭*	*A♭ - a♭/d♭*	*a♭*	*E♭/A♭*	*A♭/D♭*
Piano	*C♭*	*D♭/G♭*	*C♭*	*G♭/C♭*	*A♭/D♭*	*A♭* and *C♭* clash	*a♭*	*E♭/A♭*	*A♭/D♭*

Bar	42-43	44-50	51-54	55-56
Cello	?	*A♭*	*D♭*	*d♭*?
Piano	*E♭/A♭*	*A♭* (touches of *G♭/C♭/F♭*)	unstable———	

balance of similarity and difference is also seen in the spacing of the five shared pitches; the cello's major seventh a#-b and the minor seventh f#-g# are retained in the piano as b♭-c♭ and g♭-a♭, but the cello states these pitches melodically, the piano harmonically.

For the remainder of bars 1-14, the music of both instruments falls within the composite diatonic field *e♭/a♭/d♭* and makes use of the "false relations" g♭-g♮, c♭-c♮ and f♭-f♮. The exception to this is the excursion to the sharp side in bars 8-11. Here, the pivotal use of enharmonic relations is once more crucial. This passage, which wheels rapidly through the relationships between relative and parallel majors and minors, thus creating a chain of minor thirds, contains the seed of an extremely important structural idea. The chromaticism which challenges the fifths-based diatonicism is often based on the "ic3 cycle", or set 4-28 or the diminished seventh, to give it all its possible names. Thus the minor thirds and perfect fourths/fifths (ic3 and ic5) which form the roots of the foreground harmonic language, also play a larger structural role in the fragmentary middleground.

The flat/sharp opposition recurs in bars 15-25, although it would be simplistic to describe this passage, as Harvey does, as "bitonal". While the cello in 15-16 espouses *B* and then shifts to *C♯* in 17-2, the piano has *C♭* in 15-16 and *D♭* moving to *G♭* in 17-21. Whether this simultaneous presentation of a field in its sharp and flat guises is meant to aid reading or is a genuine expression of tonal conflict is a debatable point. Similarly ambiguous is the recapitulation of bars 22-26 in bars 185-189; during the former, the cello moves through *E/B* to *B/F♯* while the piano maintains *C♭/G♭*; in the recapitulation, both instruments have the sharp notation. A possible reason for this is that the flat notation of the former allows a smoother optical

transition to the *A♭* field of 28-9, while the latter moves to *D/d/F.*

The tension inherent in the cross-relations of composite diatonic fields rises to the fore in bars 31-35. G♭ and c♭ are heard simultaneously with g♮ and c♮ in the climactic bar 35. Here, f♭ and c♭ are pivotal, representing *C♭* in relation to the piano left hand, but being reinterpreted as e♮-b♮ by the piano right hand. The uppermost line in 33-35 is a further manifestation of 3-10 and 4-28 (f-a♭-c♭ followed by d♭-f♭-g-b♭).

The relative diatonic stability of bars 37-51 has already been noted. However, it is important to point out that moments of instability are once more provided through the agency of set 4-28. Thus, in bars 42-3, the combination e-d♭-b♭-g is heard in the cello, the preceding e-b-e having disrupted the prevailing *D♭/A♭* field.

In 51-6, a passage of obviously transitional character, diatonic stability is disrupted by the appearance of fourths from fields other than the prevailing *D♭* (a-d in b.52, c♭-f♭-b♭♭ in b.53). Set 4-28 and its complement, 8-28 the "octatonic scale", are once more in evidence as the insistence on minor thirds becomes more intense (see b.54, beat 4 - b.57).

The harmonic material of the **B** section is difficult to describe in terms of diatonic fields, even composite, overlapping or conflicting fields. The harmonic context is clearly of a different order from that of the **A** section, even if the basic constituents, the trichords and tetrachords, remain identical. The increased chromaticism of the **B** section is partially explained by the fact that "diminished" harmony and octatonicism play an enhanced role, although it would be overstating the case to say that octatonicism displaces diatonicism as the background harmonic "wash".

This change of harmonic substance is not the result of an arbitrary choice, but is based on an alternative interpretation of the implications of the trichords and tetrachords identified in Tables 9.2 and 9.3. It has been noted that most of the tetrachords in Table 9.2 have diatonic associations. It should be further pointed out that the larger sets forming diatonic fields, 7-35, 8-23 and 9-9, can all be represented as segments of the cycle of fifths. Another way of putting this is that the interval vector of each of these larger sets maximizes ic5; 7-35 [254361], 8-23 [465472], 9-9 [676683].

The octatonic set 8-28, by contrast, maximizes ic3, being made up from two forms of 4-28, the "ic3 cycle". Its interval vector is [448444]. Further investigation of the tetrachords in Table 9.2 reveals that 8 out of the 13 are subsets of the octatonic scale 8-28 (4-3, 4-9, 4-10, 4-13, 4-17, 4-18, 4-26 and 4-28). The change from background diatonicism to octatonicism thus represents a change of emphasis from structures built on ic5 to those built on ic3.

Explicit occurrences of 8-28, 4-28 and 3-10 in the **B** section are frequent; the succession of tremolando fifths in bars 70-73 outlines two forms of 4-28 moving in parallel, combining to form 8-28 (see Ex.6.9(b)); the cello line in bars 79-81 and 83-85, made up primarily from overlapping statements of sets 3-2, 3-3 and 3-7, also creates forms of 8-28 (see Ex.9.10). The metrical disposition of the former also emphasises a segment of the octatonic scale.

Sets 4-28 and 3-10 also play important roles in the climactic passages of the **B** section. During bars 90-112 pitch classes 0, 3, 6 and 9 are particularly prominent. d#-f# (or e♭-g♭) occurs frequently in bars 90-99. The long-sustained c-e♭ dyad in the cello in 102-105 is matched by piano dyads f#-a in 106-109 and 110-112. The

upper voice in these two piano dyads rises from f# (b.106) to a (b.110), while the cello emphasises c in 107-108 and e♭ in 110. The "association" of these pitches across passages of intervening music creates a "middleground" statement of set 4-28 (see Ex.9.11).

4. Conclusion

This movement encapsulates the important issues in understanding Carter's transitional music; (1) the subversion of conventional forms or genres (the scherzo and trio) and styles (jazz-influenced populism); (2) the development of a harmonic language which is based on the recombination of the triadic interval classes 3 and 5; (3) the tentative formation of a principle of contrast through switching emphasis from one interval class to another and the consequent decay of tonality, however "extended", as a large-scale organizing factor.

CHAPTER 10: SONATA FOR FLUTE, OBOE, CELLO AND HARPSICHORD, FIRST MOVEMENT.

1. Introduction

Carter's Quartet Sonata has been described as a relaxation after the strenuous effort of composing the First String Quartet (1951). For Schiff, the Quartet represents "a hard-fought victory" [Schiff 1983: 164] in the struggle to create a new musical language, while the Sonata is the subsequent "spontaneous celebration". In the later work, "having assimilated and mastered a new language, he was able to use it in a quick, relaxed and improvisatory manner." Two stylistic features in particular - the comparatively simpler rhythms and textures - distinguish the Sonata from the String Quartet and justify this view of it as a relaxation. The motivation for this simplification appears to have been both practical and aesthetic. On one hand, the Harpsichord Quartet of New York, who commissioned the work, were not a twentieth-century specialist ensemble and might have found technical complexities as great as those of the First Quartet too challenging. On the other, according to Schiff, "he wanted to show that his new approach to musical form was broader in implication than the specific procedures used in the Quartet" [Schiff 1983: 165]. Carter therefore reduced the role of polyrhythmic counterpoint and metric modulation in the Sonata in order to reveal this "new approach" more clearly. The work is also the first in which Carter employs a version of Schoenberg's *Hauptstimme* notation in order to highlight the principal voice, a technique obviously intended to aid the performers, but which also suggests a more hierarchical relationship between the sharply differentiated

instruments of the ensemble, compared with the "democratic" polyphony of the String Quartet.

Wilfrid Mellers, who clearly regards the Sonata as welcome light relief in the midst of the formidable intellectual strenuousness of Carter's output, praises it because "one is aware that the processes, whatever their origin, have become quintessentially human" [Mellers: 121]. The formal structures and processes referred to by Schiff and Mellers are, in common with those of other works of Carter's in the period 1945-55, generated by patterns of growth, change and decay, and by the interaction between contrasted instrumental "behavioural types". In this case, "the somewhat acid timbre of the harpsichord is amplified by the other instruments, and its typical gestures are anticipated, echoed and modified in terms of their original characters" [Northcott: 223]. Carter's formal processes appear to grow naturally and logically from the musical material, thus creating a balance between logical system and apparently spontaneous flights of imagination. It is this, together with the ease and freedom with which Carter manipulates a unified musical language, which gives the work the particularly relaxed quality remarked on above. There is, however, no abandonment of intellectual rigour in its construction.

The first movement, being relatively concise and less complex than the other two, offers a convenient, though not unrepresentative, subject for an analysis of Carter's "new approach to form" and his "new musical language."

2. Form: processes.

Carter's own comments on the Sonata indicate that its central inspiration was

the variety of timbres available on the Pleyel harpsichord, the instrument on which it was originally played:

> the whole range of musical expression, details of shape, phrasing, rhythm and texture, as well as the large form [...] were all determined and grew out of a desire to explore the many colorful possibilities of the modern harpsichord, with the other three instruments serving as a frame to set this off in best relief, and with their "musical behaviour" conditioned by this aim. [Edwards: 69]

Analysis of the first movement will confirm that texture (including the manipulation of timbre) is indeed the most significant parameter in the articulation of its form. While the harmonic and motivic language of the movement will be examined for its typical characteristics, it will be observed that harmony and motive have been relegated to a supporting, rather than a determining, role.

Carter's sleeve notes for the 1969 Nonesuch recording state that the movement begins "*Risoluto*, with a splashing dramatic gesture whose subsiding ripples form the rest of the movement." [*CEL*: 231] Schiff expands on this comment by suggesting that the "form of the movement is the attack-decay contour of the harpsichord in slow motion" [Schiff 1983: 166] and Bayan Northcott has similarly described the movement as a "long diminuendo" [Northcott: 223]. This phrase succinctly encapsulates one aspect of Carter's "new approach" - his creation of form through the use of continuous processes. Although it is going a little too far to assert, as Schiff does, that "there are no themes" in this movement [Schiff 1983: 166], passages of large-scale recapitulation are non-existent, as are the principles of movement between tonal areas and contrast between opposing thematic ideas so that the movement has little relationship to any conventional musical form, and thus represents a further step away from the traditional models which, albeit radically adapted, form the background to the

movements analyzed in Chapters 8 and 9.

In fact, several processes, incorporating rhythmic, metrical and textural factors as well as dynamics, contribute to the effect of a "long diminuendo". However, as is typical in Carter's music, all of these processes are complicated by factors which interrupt them or interact with them, thus making the progress of the movement rather less predictable and mechanical than the notion of a "continuous process" might imply. The principle of juxtaposed contrasts continues to be an important one, working here in combination with the processes mentioned above to produce a structure in which sectional opposition and continuity are finely balanced. Analysis of the movement's form will begin with those processes which most clearly embody the "long diminuendo", before proceeding to more complex issues.

(a) Dynamics

Most obviously, the movement traces a pattern of dynamic decay, from ***ff*** *molto marc., drammatico* in bar 1 to a quieter level in the later stages. There is, however, a distinction to be drawn between the constant dynamic levels of the harpsichord, which can only be modified by changes of registration, and the much more rapid flexibility of the other instruments, whose dynamic levels may be coloured by crescendi and diminuendi, accents and forte-pianos.

Analysis of the dynamic and articulation markings, together with the harpsichord's registrations, suggests a division of the movement into four sections:

A (1-8) **B** (9-15^{2}) **C** (15^{3}-30) **D** (30-68)

In section **A**, the general dynamic level is very loud. All parts are marked

molto marcato, with *marcatissimo* appearing in the oboe and cello parts in 7-8. The harpsichord is initially marked ***ff*** and begins with "Tutti" registration, subtracting the 16' stop after bar 1. The flute, oboe and cello parts are predominantly within the range ***mf-ff*** and make frequent use of accents, sudden dynamic swells and ***fp*** markings.

Section **B** is characterized by an immediate contrast. The harpsichord is marked ***p*** throughout, although an effect of gradually increasing volume is created by the movement of the principal rhythmic part (constant staccato quavers) from the 8' stop of the upper manual (bb.9-11) to the 4' and 16' stops of the lower (bb.11-14), to which the 8' stop is added in bar 14. The flute, oboe and cello are marked ***p*** or ***pp***, apart from a brief burst of ***mf*** at the beginning of bar 14.

Section **C** brings a return to the dynamic level of **A**. The harpsichord is once more marked ***f***, increasing to ***ff*** from bar 21 with the reintroduction of "Tutti" registration. For the other instruments, this is the most variable section, with dynamics ranging from ***pp*** to ***ff***. As in section **A**, their level is predominantly ***f*** or ***ff*** and *marcato*, and there are even more pronounced dynamic swells and *subito* ***p*** or ***mf*** markings. At the end of the section, there is a gradual decline from the high point of bar 26 (***ff*** *marc.* tutti) to ***p*** (flute) in bar 29.

In section **D**, the harpsichord is marked ***mf*** throughout, though small variations are produced in bars 41-53 (*più* ***f***, created through addition of the 4' stop of the lower manual to the 1/2 8' stop and Coupler) and bars 52-68 (*meno* ***f*** in left hand, created through switching to the upper manual). The remaining trio are predominantly ***p*** and ***pp***, though occasional outbursts of ***f*** and ***ff*** still intrude (bb.34, cello, oboe; 41, cello;

44, flute, cello; 59, cello; 60, flute). From bar 40, the cello plays pizzicato (apart from two isolated notes, the quaver d_2 in b.53 and the $b\flat_5$ harmonic in bb.62-4), thus diminishing its dynamic power.

As can be seen from this brief description, the overall dynamic progress of the harpsichord part is not so much a "long diminuendo" as an initial alternation between opposite extremes, balanced by a long passage at an "average" dynamic, as though a pendulum were left to swing until it came to rest.

(b) Pulse

A second, clearly audible, process working in parallel with the dynamic decay, is the gradual deceleration of the basic rhythmic pulse in the harpsichord part from semiquavers in section **A** to quavers in **B** and crotchets in **D**. As with the dynamic decay, this process takes place in distinct stages rather than continuously; there is no suggestion of metric modulation (this is reserved for the last movement) or of continuous deceleration as in the *Variations for Orchestra*. However, the process is complicated by other features; (1) while the harpsichord tends to behave "mechanically", moving in equal note values, the rhythmic behaviour of the other instruments, like their dynamic behaviour, is much more varied and does not always match the harpsichord's; (2) the process is temporarily reversed in section **C**, so that, just as there is a return to the loud dynamic level of the opening section, there is also a return to its busy, semiquaver-dominated rhythmic character.

The rhythmic profile of the four brief passages for the harpsichord in **A** is essentially the same: each begins with two to four semiquaver attacks, leading to a

sustained chord, and ends with a "tail" of between three and seven semiquavers. The rhythmic characteristics of the other three instruments are more varied, but in general, the principal material moves mainly in semiquavers, and other movement is all in note-values which are multiples of the semiquaver.

In section **B** the harpsichord plays continuous quavers on one manual, shadowed by movement in crotchets or dotted crotchets on the other. The flute doubles the harpsichord in bars 9-10, otherwise, flute, oboe and cello have isolated phrases, mainly using the dotted quaver-semiquaver figure and long sustained notes.

Section **C** is characterized by a return to the faster moving pulse of **A**, with an added feature of complexity. The phrases of the harpsichord move mainly in semiquavers, while in the remaining trio, the principal material moves mainly either in semiquavers or triplet quavers. In a movement which, by Carter's standards, is relatively restricted in terms of rhythmic resources, the introduction of triplets in the oboe part in bar 20 is a significant event. In the succeeding bars, triplets appear with increasing frequency and are played off against semiquavers to produce a more complex rhythmic texture. Bars 27-8, with five consecutive beats of triplet motion moving throughout the texture, is the climactic point of this process. In the later stages of the movement, triplet motion is reduced to a few fragmentary echoes (b.33 oboe, b.48, 50 harpsichord, b.61 flute).

Section **D** is dominated by the crotchet movement in the harpsichord. Four sub-sections may be discerned by examining the harpsichord part - (i) 30-36, (ii) 37-40, (iii) 41-53, (iv) 54-68 - each beginning with continuous movement in crotchets, split between right and left hands and ending with sustained chords. The tendency is towards longer stretches of movement in equal note values, thus sub-sections (i) and

(ii) begin with respectively ten and thirteen consecutive crotchet attacks. Sub-section (iii) begins in a similar way, but after twelve crotchets, instigates a gradual increase of pulse (to triplet quavers in b.48) and decrease (through triplet crotchets in b.50). Sub-section (iv) consists of no fewer than fifty-six consecutive crotchet attacks and is thus the culmination of this process. Against this quietly inexorable march, flute, oboe and cello have material of very variable phrase-lengths and rhythmic values, tending increasingly to brief, isolated phrases or single notes (e.g. last 5 bars), but which nevertheless includes occasional bursts of continuous activity (e.g. cello bb.40-41, 23 semiquaver run). Between bars 44 and 50 all three move in patterns of continuous staccato quavers, mimicking the harpsichord's manner (and in particular its part in section **B**).

The pattern produced here is essentially one of contrast between sections in which the harpsichord and the other instruments behave in an approximately similar fashion (**A** and **C**) and those in which their behaviour polarizes (**B** and **D**). In sections **A** and **C**, all instruments participate in a texture in which an impression of continuous but irregular movement is created, while in **B** and **D** the harpsichord tends towards absolute regularity, while the others tend towards greater irregularity. This interpretation is supported by Carter's use of *rubato*[1] and *giusto* markings. At the opening of the movement there is a general direction *sempre un poco rubato.* During

[1] The use of the instruction *rubato* is unusual in Carter's music at this point. It certainly has no place in the precisely measured rhythmic relationships of the First Quartet and even the improvisatory cello line at the opening of the Cello Sonata is marked *quasi rubato* rather than *rubato.* The *rubato* quality of the latter is conveyed through a variety of techniques, ranging from the relatively simple, such as the avoidance of movement in equal note values or on the crotchet beats, to the more complex, such as the use of varying subdivisions of the beat, polyrhythm and metric modulation. In the Quartet Sonata, however, only the simplest of these techniques are used.

section **C**, the instruction *(sempre rubato)* appears on each individual part, perhaps implying that the continuous quavers in the harpsichord in bars 9-15 should be played in *tempo giusto*. *Tempo giusto* does appear as a general direction at the opening of section **D** (b.30), and again as a reminder in the harpsichord part at the beginning of the second sub-section (b.37). Meanwhile, the other three instruments are again instructed to play *rubato* in bars 32-34.

(c) Textural continuity, density and register

The processes discussed thus far are merely the simplest among the many facets of texture explored by the composer in this movement. Carter frequently uses register and density to emphasize basic characteristics of textural continuity. In the flute, oboe and cello parts, there is a textural "decay" from a sustained tutti at the opening to a fragmented texture at the close, in which the individual lines rarely overlap and linear continuity evaporates into isolated notes. This process is reversed in the harpsichord part, which begins with isolated gestures and gradually builds longer paragraphs. As has been observed with regard to dynamics and pulse, this is not a smoothly continuous process, since in section **B**, the harpsichord builds a relatively sustained passage, while the other instruments have a highly fragmented texture. The complementary relationship between the continuity processes of the harpsichord and of the other instruments introduces another important formal factor - the relative interdependence of the harpsichord and the other instruments.

In section **A**, the harpsichord initiates and punctuates the material of the other instruments; its phrases are generally short (between 2.5 and 5.25 crotchets duration),

and are separated by rests of similar duration. Each phrase follows a similar pattern in terms of density and contour: a succession of dyads leads to a sustained chord in the middle to low register, followed by a rapid descent in a single line of semiquavers (the very brief second phrase is an exception here). While the harpsichord exploits the middle to low register ($b\flat_1$-c_5), the flute, oboe and cello play mostly in the middle to high register ($f\#_3$-a_6), apart from opening and closing phrases in cello. In contrast to the harpsichord's well-separated phrases, they play an almost continuous tutti from the third crotchet of bar 1. There are always at least two parts playing simultaneously, usually three (the only rests being in the flute: 4.5 crotchets in bb.2-3, and oboe: 3 crotchets in bb.4-5).

In the **B** section, there is an abrupt change of texture and the harpsichord is clearly dominant. The flute doubles the harpsichord's melodic line two octaves higher for two bars, while from 10 to 15, flute, oboe and cello have isolated, fragmentary phrases, clearly differentiated from the harpsichord's material. This passage thus prefigures the textural character of later parts of the movement. The harpsichord plays continuous quaver movement in one hand, sustained 4-part chords in the other, all within a narrow range in a middle register (b_3-g_5). Flute, oboe and cello play three or four-note phrases, ranging from 1 to 5.5 crotchets in length. There are never more than two parts together and usually only one plays at a time. All three are silent for 4.5 crotchets in bars 11-12 and for 2.5 crotchets at the end of bar 14. Their material is also strongly differentiated from that of the previous section in terms of register, being in a middle to low range ($g\#_2$-f_5). The single pizzicato cello chord in bar 14 also anticipates the use of this timbre in the movement's final stages.

Section **C** is perhaps the most complex part of the movement. The texture

tends towards a pattern of alternation between the harpsichord and the other instruments, with the latter gradually asserting their independence from the former. As in section **A**, the harpsichord has several discrete phrases of variable duration, separated by rests of similar length. The music for the other instruments, as in **A**, is mostly presented three parts at once, but its continuity is interrupted by general rests, in which the harpsichord is allowed to stand out. This tendency culminates in two brief, climactic "solos", one for the harpsichord (23-4) and one for the trio (26-9). The latter corresponds with the harpsichord's longest silent stretch in the movement. Bars 26-29 also effect a climax through the conjunction of the goals of processes begun earlier; (1) increasing rhythmic variety, through the introduction of triplets (as discussed above, p.231) and (2) the expansion of the total pitch-range of the movement. The pitch extremes of the movement - c_2 in the cello, $b\flat_6$ in the flute - are heard in close proximity in bar 27, 4th beat. This is the culmination of a process of gradual expansion of the pitch rage covered by the flute, oboe and cello. In section **A**, the tessitura is predominantly high (above the harpsichord) until the cello plunges in bar 9. The cello's exploration of its lower register continues as part of a process of building melodic lines that sweep up or down through registers (see bb.18-19, 20-21, 24-25). The $b\flat_6$ of the flute has been sounded previously (bb.9, 15, 16). However, in bar 27, it appears as the goal of a semitonal progression stretching over six bars. The flute's a_6 is sounded in bars 22 and 25, but each time, the ascending line turns back on itself. In bar 27, however, the progression $g\#_6$-a_6-$b\flat_6$ in the upper register of the flute (clearly indicated by the *Hauptstimme* markings) resolves the expectation of upward motion.

After this climactic "sounding-together", in section **D**, the members of the

instrumental trio become isolated from each other, and the harpsichord quietly asserts its dominance. Apart from the passage between bars 44 and 49, flute, oboe and cello do not all play together for the rest of the movement. There are several examples of overlapping of phrases between two instruments (for example in bb.33-5), but for the most part, the instruments appear singly, separated by long rests.

The dominance of the harpsichord takes the form of sustained rhythmic motion (as discussed above) and harmonic "comprehensiveness". The latter has two stages; first, the gradual chromatic saturation of a small pitch-space (bb.41-53) and second, the quasi-symmetrical expansion across the entire keyboard range (bb.54-68).[2] These processes will be examined in the following two paragraphs.

Between bars 30 and 44, the harpsichord resumes a similar texture to that found in section **B**, with a "melodic outline" of continuous crotchets forming a sustained chord of gradually shifting pitch and density (up to seven notes) all within a restricted middle register (b_3-d_5). However, the third statement of the "melodic outline", beginning in bar 41, leads to a gradual cluster-like chromatic saturation of a hand's span on the keyboard. The spacing of the twelve-note sonority which is formed in bars 46-7 and 48-9 is interesting, however, in that it gives priority to one pitch among the twelve - b♭. The major seventh from a♭$_4$ to g_5 is saturated, but the b♭ is displaced from its "natural" position near the bottom of the cluster and appears above the g. The focal priority of b♭ is also emphasized by the other instruments; the fourth f-b♭ appears in octaves between cello and flute in bar 47 and is repeated in bar 48 in three octaves on all three melody instruments. The b♭$_6$ of the flute in bar

[2] Both of these processes may be compared with the "cyclonic" orchestral clusters of the second movement of the Piano Concerto (1965).

48 marks the high point of the passage, while the crescendo to ***mp*** and the sustaining of the $b\flat^6$ for four beats in the oboe also contribute to the prominence of this pitch. The texture adopted in bars 44-49 is essentially an expansion of the flute's doubling of the harpsichord in bars 9-10. In the later passage, the melody instruments double one another freely (exploiting every possible combination), always adhering to the notes of the cluster sustained by the harpsichord and occasionally doubling its "melodic outline".

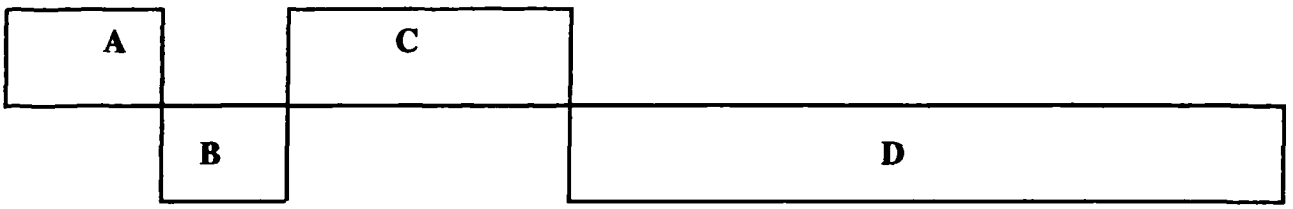
In the final sub-section of the movement (54-68), the fourth statement of the harpsichord's "melodic outline" begins as before within the narrow span of a perfect fifth (a_3-e_4), but the hands gradually diverge from one another, eventually coming to a halt when a range of four and a half octaves has been opened up ($b\flat_1$-f_6), these pitches representing the harpsichord's registral extremes for this movement. This process of gradual expansion of pitch range is a massive expansion of the semiquaver gesture with which the harpsichord begins the movement, a relationship which is confirmed by examining the harmonic content of the beginning and end of the movement (as discussed in Chapter 5).

(d) Summary

Carter's metaphor for the form of the movement is, like those used in describing several of his later works, drawn from the natural world.[3] The image of a

[3] See, for example, his comments on the *Variations for Orchestra*: "I have tried to give musical expression to experiences anyone living today must have when confronted by so many remarkable examples of unexpected types of changes and relationships of character, uncovered in the human sphere by psychologists and novelists, in the life cycle of insects and certain marine animals by biologists, indeed in every domain of science and

"splashing gesture" and its "subsiding ripples" suggests an organic wave-pattern of the type discussed in Schiff's study [Schiff 1983: 47-50]. However, the essentially mechanical nature of the harpsichord (especially its inability to graduate changes of dynamic and tone colour smoothly), coupled with Carter's avoidance of the possibility of fluid transitions using metric modulation, lead to a rather less continuous, more clearly divided form. The structure of the movement may be best represented in the diagram below:



This schematic representation emphasizes the relationship between the dynamically and rhythmically more animated **A** and **C** sections (dominated by the *rubato* style of the melody instruments) on one hand, and the more restrained **B** and **D** sections (dominated by the *giusto* style of the harpsichord) on the other. It also suggests a kinship with the kind of collage or cinematic "intercutting" technique which Carter was evolving during this period and which he practised on a large scale in the First Quartet and on a smaller scale in Variation 7 of the *Variations for Orchestra* and in the second

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art." [*WEC*: 308-9], the *Double Concerto*: "The work is built on a large plan, somewhat like that of Lucretius's *De Rerum Natura*, in which its cosmos is brought into existence by collisions of falling atoms [...]The coda is the dissolution of this musical cosmos." [*CEL*: 243, 246], and the *Concerto for Orchestra* "[the music I was writing] seemed to revolve around four main ideas[...] (1) the drying up of autumn, [...]; (2) the swiftness and freshness of the winds that blow away the old and bring in the new; (3) the exhortation of a shaman-poet calling for rebirth and a destruction of worn-out things; and, finally, (4) the return of spring and life." [*CEL*: 277]

and third movements of the Quartet Sonata. Interestingly, in its internal proportions, it represents the exact opposite of the first movement of the Piano Sonata. Whereas the earlier work proceeded through a succession of sections of increasing concentration and intensity, in the later work, the sections are increasingly expansive.

3. Motivic and harmonic material

The preceding discussion has strongly suggested that it is essentially rhythmic and dynamic, rather than motivic and harmonic, factors which generate the movement's form. Carter's approach to thematic material in this movement is in some respects closer to his later "athematic" works of the 1960s and '70s, than are even such sophisticated pieces as the First Quartet and the first movement of the Cello Sonata. In those works, despite the fact that thematic ideas are in a state of restless transformation and recombination, the articulation of structure relies to a large extent upon the recurrence and sometimes extensive recapitulation of recognizable harmonic or melodic motives (that is, "ordered" statements, not just recurrent set classes). In the Quartet Sonata's first movement, however, although pitch-structuring processes are discernable, motives rarely achieve a "definitive" form which can be referred back to, and, compared with the movements analyzed in Chapters 8 and 9, there is almost no recapitulation of the type described above. Perhaps the closest relatives of this movement among Carter's oeuvre are those of the *Eight Etudes and a Fantasy* that are principally concerned with texture rather than thematic processes.

As in many Carter works, the opening contains the seeds of both the harmonic

language and the gestural vocabulary of the movement. However, it should be borne in mind throughout the ensuing discussion that, while different gestural or "behavioural" types are evolved for the harpsichord on one hand and the remaining trio on the other, in the domain of harmony there is no such opposition. Instead, as in most of the works before the Second String Quartet, there is a homogeneity of harmonic fabric, in which all parts share equally in the exploration of the intervallic potential of a "key-chord".

(a) Rhythmic and pitch-contour cells

The thematic material of the movement is perhaps best understood as being generated through the continual transformation and combination of a handful of extremely small and simple rhythmic and pitch-contour cells, which are contained within the first bar of the harpsichord part. Most of the significant motivic ideas of the movement are evolved during the opening **A** section (bb.1-8), which will be the focus of the following discussion.

The initial rhythmic "head-motive" - four semiquavers leading to a minim - proves to be highly plastic, partly because of its ambiguous metrical stress; the semiquavers appear during the rest of the passage both as an anacrusis and as a downbeat. The first four phrases of the harpsichord each offer a different variant on this basic idea, for example, by adding or subtracting semiquavers from the initial group, and bringing forward the attack on the long note (see Ex.10.1). The distinctive pitch-contour of this head-motive, a widening zig-zag, is also subjected to transformations. The original motive is symmetrical about the pitches d_4 and $e\flat_4$, but

subsequent appearances in the harpsichord distort this symmetry[4].

The harpsichord's "tail-motive" - a sequence of descending semiquavers escaping from a tied-over long note and avoiding metrical stress either at the beginning or end - is similarly elastic, ranging from three to seven notes and being omitted entirely in bar 3 (also, see Ex.10.1).

These variations in length and shape are exaggerated in the parts for the flute, oboe and cello in bars 1-8 (see Ex.10.2). The head-motive never appears exactly as on its first occurrence; its least radical variant is that heard in the flute and oboe in the first bar, extended by a single extra semiquaver anacrusis. Much more elaborate extensions of the semiquavers as an anacrusis can be found in the oboe in bars 2^3-3^1, 3^4-4^1 and 5^1-6^1. The other most significant variants on the rhythm of the motive are the contraction of the semiquaver group to a single semiquaver, producing a "scotch-snap" figure, and its inverse, a dotted-quaver-semiquaver anacrusis. These two rhythms, together with the augmentation of the semiquavers to quavers, come to dominate the texture during the last three bars of the section, thus gradually preparing for the quaver pulse of section **B**. The zig-zag contour of the head-motive is also influential in shaping these lines, whether in passages which refer unambiguously to the rhythm of the harpsichord's first bar (such as the cello part in b.2, or the oboe in bar 4), or in slower-moving lines (such as the flute part in bb.5-6).

The harpsichord's "tail-motive" plays a lesser part in the formation of the flute, oboe and cello lines, although its descending contour, greatly elongated, can be detected in passages such as the flute part of bars 3^3-4^2 and the cello part of bars 5^4-7^1.

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[4] The implications of this symmetry, and the exact intervallic content of this motive will be explored later.

Analysis of the harpsichord's opening gesture reveals the origins of other important cells generated in section A. Dividing the harpsichord's first two dyads into a central falling semitone (e♭-d) encased within a falling interval class 7 (g♭-b) produces two intervallic cells which have further consequences. Examples 10.3 and 10.4 illustrate Carter's use respectively of the falling semitone and the falling "perfect fifth" (and their inversions), within section A. Still other cells derive from the flute part of bars 1-2 (itself a variation on the harpsichord's first phrase); the upward leap of a major tenth from b_4 to $d\#_6$ in bar 1 reappears prominently in flute or oboe in bars 3, 4, 6 and 7-8 (see Ex.10.5), and the conjunct motion d#-c#-b#-c# of bar 1^3-2^1 is developed extensively by the oboe (see Ex.10.6).

These first eight bars are typical of the movement as a whole in their protean re-shaping of simple intervallic cells, a process in which all instruments participate, creating a polyphonic texture. The net result of Carter's technique here is that practically all the melodic motion, whether by leap or step, and all the rhythmic ideas, which variously divide the crotchet beat into groups of semiquavers, are perceived as belonging to the thematic fabric. As has been discussed above, the only significant rhythmic cell not introduced here is the triplet quaver idea, which is incorporated into the texture from bar 20 onwards, and the only exceptions to the general procedure are those passages in which a mechanical regularity of pulse obtains.

(b) The "key-chord" and its relatives.

There is very little discussion in the literature on Carter of the harmonic language of the Quartet Sonata. Schiff states that the Sonata's "harmonies derive

from the opening bars of the harpsichord" [Schiff 1983: 165]. This statement is accompanied by a chart labelled "Harmonic Scheme"(see Ex.10.7), which illustrates some of the symmetrical structures contained within the harpsichord's first four semiquavers. The pitch-configurations labelled in Schiff's chart as "chords" may be interpreted as sets 4-17, 4-20 and 4-7, and their similar intervallic structure of ic4+ic4 is explicitly shown.

As has previously been discussed (see Chap.5, pp.124-5), these three tetrachords are subsets of the hexachord 6-20 and it is the latter which seems the most likely candidate as "key-chord" or source-set for the movement, by virtue of its properties of symmetry, the tightly unified nature of its Kh subcomplex and its prominent appearances within the movement as a referential sonority. These appearances have already been noted (see p.129 and Exx. 5.15, 5.16 and 5.17). As in the Cello Sonata, Carter does not restrict himself to a vocabulary consisting entirely of members of the Kh(6-20) subcomplex. The tetrachord 4-18, which has a close relationship with the "quasi-seventh" chords 4-17, 4-19 and 4-20 (see Chap.5, p.116) is a significant part of the movement's make-up. Another important group is formed by those tetrachords which share with 4-7, 4-17 and 4-20 a symmetrical pairing of identical interval classes, particularly ics 1, 3 and 5, which are constituents of the interval vector of the "key-chord" 6-20[5]. The important trichordal additions to Kh(6-20) are 3-2 and 3-5, which share with 3-3 and 3-4 an intervallic structure containing one instance of ic1. Table 10.1 summarizes the significant members of the movement's harmonic vocabulary.

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[5] The intervallic structure ic4+ic4 has been omitted here since it merely duplicates the transitive group 4-7, 4-17 and 4-20 and adds the "whole-tone" tetrachords 4-21 [0,2,4,6] and 4-28 [0,2,6,8], neither of which are used in this movement.

Table 10.1. Set-class vocabulary of Quartet Sonata, first movement.

Kh(6-20)

6-20	[0,1,4,5,8,9]	3-3	[0,1,4]
5-21	[0,1,4,5,8]	3-4	[0,1,5]
4-7	[0,1,4,5]	3-11	[0,3,7]
4-17	[0,3,4,7]	3-12	[0,4,8]
4-19	[0,1,4,8]		
4-20	[0,1,5,8]		

"Triad + seventh chords"

4-17	[0,3,4,7]
4-18	[0,1,4,7]
4-19	[0,1,4,8]
4-20	[0,1,5,8]

Symmetrical tetrachords

4-3	[0,1,3,4]	ic1+ic1/ic3+ic3
4-7	[0,1,4,5]	ic1+ic1/ic4+ic4
4-8	[0,1,5,6]	ic1+ic1/ic5+ic5
4-9	[0,1,6,7]	ic1+ic1/ic6+ic6
4-10	[0,2,3,5]	ic2+ic2/ic3+ic3
4-23	[0,2,5,7]	ic2+ic2/ic5+ic5
4-26	[0,3,5,8]	ic3+ic3/ic5+ic5
4-28	[0,3,6,9]	ic3+ic3/ic6+ic6

Trichords including one ic1

3-2	[0,1,3]
3-3	[0,1,4]
3-4	[0,1,5]
3-5	[0,1,6]

The following examples will demonstrate Carter's deployment of these sets within passages of contrasted character, namely sections **A** and **B** of the movement. Example 10.8 shows the harpsichord part of section **A**, which may be segmented straightforwardly. The example shows clearly Carter's manipulation of sets formed from the (often symmetrical) combination of interval classes 1, 3, 4 and 5. Each of the four phrases begins with two dyads of identical interval class, the first three using ic3, the last ic4. The tetrachords thus formed are 4-17, 4-3, 4-28 and 4-17 again (the

last phrase therefore presents the complementary pairing of intervals to the first). As the head-motive of the first phrase widens out, two forms of set 4-20 appear, still distributed symmetrically about the d_4-$e\flat_4$ axis. Since these tetrachords share the pitch classes f and c, when they are sustained in combination, they form set 6-20. The cello triad g_2-d_3-$b\flat_3$ completes several symmetries; (i) a form of 4-20 combined with the $e\flat$ on the second beat in the harpsichord; (ii) this form of 4-20, combined with the initial 4-17 of the harpsichord, completes another form of 6-20; (iii) this hexachord is in turn the complement of that formed by the symmetrically paired tetrachords on the second quaver. Thus, the first two beats of the movement present all twelve notes in a highly structured fashion. However, the symmetry about the d-$e\flat$ axis is slightly disturbed by the displacement of the cello's d and g into lower octaves. This slight "skewing" of strictly symmetrical presentation in the first phrase is exaggerated in the subsequent phrases by similar registral displacements and distortions of interval.

The third phrase arrives at a sustained harmony which is asymmetrical, but which nevertheless shows an intervallic structure built from ics 3 and 5. Taking the whole pitch-class content of the harpsichord part of bar 4 produces the hexachord 6-27 [0,1,3,4,6,9], a set whose interval vector [225222] is unique among hexachords in its maximization of interval class 3. The fourth phrase also has an asymmetrical central chord, although again its construction from ics 3 and 5 is obvious and the interplay of overlapping versions of the tetrachords 4-8 and 4-19 show its integration with the rest of the harmonic fabric.

In each case, the "tail-motive" of the harpsichord's phrases are formed from subsets of 6-20. The first phrase uses two overlapping forms of 5-21 (or non-

overlapping forms of 4-19), the third and fourth phrases single statements of 4-20 and 5-21 respectively.

Example 10.9 examines the flute, oboe and cello parts in the same section. Though these are clearly not as tightly organized as the harpsichord part, the coordinating role of certain sets, especially 4-18 and 4-19, can be seen. A particular feature of these primarily melodic rather than harmonic parts is the repeated use of sets 3-2 and 3-3 as quasi-scalic connective material. Example 10.10 shows the development of a particularly important idea, deriving from the use of set 3-2 in this section, which establishes a strong connection between the melodic and harmonic dimensions of the movement. Initially, the oboe figure in bar 2 appears as a development of the motive in the flute in bars 1^4-2^1 which outlines trichord 3-2: d#-c#-b#-c#. The pervasiveness of 3-2 in the oboe line in bars 1-5 gives rise to a quasi-symmetrical falling and rising linear pattern, which is taken up by the harpsichord in bar 16. This achieves its definitive form in bars 30-31, where the motive receives its clearest expression as the "melodic outline" of the harpsichord part and also gives rise to the symmetrical pairing of ic3s to form 4-17, the movement's opening sonority.

Example 10.11 demonstrates the integration of the musical language in section **B** of the movement. This example is a more detailed analysis of the passage examined in Ex.5.9, and is derived from the harpsichord part of bars 9-15 and the flute part of bars 9-10. Since these parts consist of an unbroken string of equal note values, some of which are sustained in a gradually changing four-note chord, the problem of segmentation has been approached in the following way; the melodic line has been subjected to a process of imbrication in order to extract each group of three or four pitch-classes and each successive harmony has been recorded as an individual

unit. Table 10.2 shows a statistical summary of the data in Ex.10.11, which, though crude, clearly illustrates the central importance of the sets listed in Table 10.1. Furthermore, the culmination of the passage in a melodic statement of 6-20 and a harmonic one of 4-19, combining with 4-17 to produce its complement 8-19, is a striking example of Carter's control over the possibilities of his harmonic material.

Table 10.2 Statistical summary of trichords and tetrachords shown in Ex.10.11.

Sustained tetrachords (duration in quavers/number of separate occurrences):

4-7*	3/1	4-17*	5/2	4-22	3/1
4-8~	10/3	4-18~	2/1	4-27	2/1
4-13	3/1	4-19*	11/4		
4-15	6/2	4-20*	3/1		

Melodic tetrachords (number of separate occurrences):

4-4	1	4-11	1	4-17*	2	4-22	1
4-5	1	4-13	2	4-18~	2	4-24	1
4-7*	1	4-15	2	4-19*	6	4-27	1
4-8	2	4-16	1	4-20*	4		

Melodic trichords (number of separate occurrences):

3-1	1	3-5~	5	3-9	1
3-2~	1	3-6	1	3-10	1
3-3*	3	3-7	3	3-11*	9
3-4*	8	3-8	0	3-12*	3

* = Kh(6-20) members
~ = other related sets (see Table 10.1)

Example 10.12 shows the music of the other instruments during bars 10-16. Though clearly contrasted in character with the harpsichord, in terms of set-class content, their material is clearly related, thus demonstrating that at this stage in his development, Carter was not yet thinking in terms of contrasted harmonic vocabularies.

4. Large-scale pitch-organization

It is doubtful whether harmony, voice-leading or thematic process can offer much illumination of the large-scale progress of the movement. However, these areas will be briefly investigated in order to contrast with Carter's approach here with that in his previous works.

(a) Thematic recall

Between the four main sections of the movement, there is very little recapitulation of material. The flute, oboe and cello parts at the opening of section **C** (bb.15^{4}-17^{1}) recall bars 1-2 (see Ex.10.13) while the harpsichord refers to the oboe part of bar 5. However, after this brief reminiscence, the material develops in new directions. Occasional symmetrical gestures help to shape the movement. Example 10.14 shows a particularly clear and striking one which combines symmetry of pitch with that of form. The descending form of 5-5 in the harpsichord in bar 19 is literally inverted in bar 25, and this pair of brief gestures surrounds the larger statement of bars 21-24. Towards the end of the movement there are a few ghostly shadows of previously heard melodic shapes, for example, the oboe part in bar 43 recalls the flute in bars 1-2, the flute in 53-57 suggests its own line from 4-5, and the cello in 59 relives the surging semiquavers of the oboe part in bar 2 (see Ex.10.15).

(b) Pitch fields

In this work, Carter has clearly advanced beyond even the most highly chromatic passages of the movements analyzed in Chapters 8 and 9. Analysis in terms of diatonic fields would therefore be entirely inappropriate. Nor, on the other hand, apart from isolated passages, such as bar 1, bars 23-4 and bars 41-50, does Carter set about the systematic aggregation of all twelve pitch-classes. However, referring back to Ex.10.11, we can see a different example of chromatic complementation. A tabulation of the occurrences of each pitch-class in the harpsichord part from the beginning of bar 9 to the end of the second beat of bar 15 produces the results shown in Table 10.3.

Table 10.3 Pitches occurring in Ex.10.11.

(number of occurrences)

c	8	e	2	g#	0
c#	2	f	0	a	1
d	7	f#	6	b♭	5
e♭	5	g	8	b	6

This clearly shows the focal importance of the pitch g, which is sustained in the harpsichord for two long stretches, first in the middle of the harmony, then as its bass. On the third beat of bar 15, it forms the accented high point of the staccato quaver line. The p-c content and distribution in this passage also has a faintly "G minor/major" colour, particularly strongly felt in bars 9-10 and 13-14. The absence of f and g# from the harpsichord part during this passage contributes to the feeling of

"g-centredness". However, these two pitches feature prominently in the other instrumental parts (see Ex.10.12, cello b.10, oboe b.11 and oboe & cello b.14), thus making up the full chromatic complement.

(c) Linear and registral connections

The problems of discerning genuine middleground and background motives in post-tonal music such as this have been discussed in Chapter 6. The observations which follow will attempt to show voice-leading connections which are close to the surface of the music and reasonably palpable.

The most obvious means of unifying the musical texture is the passing of pitches and/or intervals between instruments and registers. For example, in bars 19-20 the $e\flat_6$-d_6 at the end of the flute phrase is taken up at the beginning of the oboe phrase two octaves lower (see Ex.10.16). A similar use of this pervasive semitone motive occurs in bars 32-35, as the motive g-f# is passed from flute to cello and c-b from oboe to flute (see Ex.10.17).

Over a longer period, the repetition of a particular p-c in a particular register or the linking of pitches in stepwise progressions are the clearest means of establishing structural connections. Example 10.18 illustrates the use of these procedures in identifying a "middleground motive". There are two basic criteria for the abstraction of the p-cs f#-g#-a-g#-f# from the flute line of bars 3-8. Firstly, they stand out from the surrounding texture by virtue of their registral extremity (emphasized by wide "up-beat" leaps). Secondly, they appear to parallel a more obvious "foreground" pattern which appears in this passage - a stepwise ascent and/or descent through a minor third,

alternating half- and whole-steps (i.e. two overlapping statements of 3-2 producing 4-1). The flute and oboe line of bars 1-2 (d#-c#-b#-c#) and the cello line in bars 4-5 (f-g♭-g-{c}-a♭) present this idea at "foreground" level, while the registral (and metrical) connection of the oboe's b-b♭ in bar 3 to the flute's b#-c# in the previous bar presents the motive at an intermediate level. The importance of this idea is confirmed by its reappearance in condensed form in bar 16 (flute and oboe) in a passage which recalls the opening in rhythm, contour and texture.

It is difficult, however, to get beyond these tentative observations. The motive identified here does not recur, apart from the foreground "ghost" in the oboe in bar 43, nor is it possible to single out one of its pitches as structurally more significant in the sense that it might form an element of a motive on an even higher plane of abstraction. It is perhaps best to regard it as an example of unconscious clinging on to a mode of musical coherence that the composer was soon to outgrow.

5. Conclusion

The formal and harmonic characteristics of this movement clearly indicate a further stylistic development from the Cello Sonata. Processes of change - many of these involving factors such as rhythm, register and texture, rather than motives and harmonies - have replaced patterns of repetition as the fundamental basis of form. The harmonic language itself is fundamentally atonal, with only the slightest of references to conventional tonal chords and functions. The composer has created a harmonic vocabulary with a strong sense of focus and unity stemming from the symmetrical properties of the key-chord, but which contains a high degree of

intervallic variety. Perhaps most importantly, Carter has taken the idea of contrasting instrumental characters a stage further by pitting the quasi-mechanical aspect of the harpsichord against the more expressive, "human" qualities of the other instruments.

CHAPTER 11: CONCLUSION

The foregoing chapters have illustrated something of the complexity of Carter's musical language by isolating its elements and then showing how they are combined in individual works. A summary of these findings is required in order to clarify the argument of the thesis, but it should be borne in mind that each of the works studied here is unique in its particular combination of compositional materials and techniques and that generalizations applied to an oeuvre which covers such varied terrain inevitably risk distorting this uniqueness and minimizing the differences between works. All of this is to say that in analyzing works of a "transitional" nature, there must be a balance between evaluating the works themselves and tracing the continuity of the process of transition. The teleology inherent in the latter must be tempered by an acknowledgement that there may be "processes" at work, rather than a single process, and that these may progress at different rates and are not necessarily continuous at all.

Two ideas shared by Carter with other composers of transitional music are the reinterpretation of certain sets and chords and the gradual weakening of tonal function. In the area of pitch vocabulary, it is clear that Carter turned away from a language in which diatonic formations were the norm towards one in which all twelve pitch-classes circulate freely, and hence from a world in which the distinction between consonance and dissonance operated to one in which contrasts of intervallic "colour" or "character" were more important. Bridging across this division is Carter's use of families of p-c sets, related through their intervallic content, in order to achieve the twin goals of unity and variety of vocabulary. The most prominent of these families

of sets are clearly those combining interval classes 3, 4 and 5, which can be used to create a diatonic context or an "atonal" one. These families of sets may be notionally coordinated through relation to a central "key-chord" or source-set, though in practice, the prominence and role of such a set varies considerably from work to work.

In the area of voice-leading, a gradual process of loosening may be observed. Techniques which bear an obvious resemblance to those of tonal prolongation (octave coupling, neighbour- and passing-notes, arpeggiation) give way to the linear association of pitches in patterns determined by the context of the work rather than by pre-existing concepts. In the later works, pitch centricity ceases to operate except at the very local level, thus weakening the sense of a "middleground" defined in terms of voice-leading. In common with the music of many other post-tonal composers, factors such as symmetry and complementation occasionally play a role in the small-scale organization of pitch materials.

Carter showed an early preference for forms which rely on continuous evolution rather than sectional juxtaposition. This is not to say that his music does not sometimes exhibit a kaleidoscopic variety of ideas and textures (the second movement of the Quartet Sonata is a good example), but that this is usually incorporated into an overarching dynamic process. Thus the conventional structures of "sonata form" and "scherzo and trio", which lie behind the first movement of the Piano Sonata and the second movement of the Cello Sonata respectively, are already subjected to the pressures of evolutionary change which mean that their final sections are very far from being literal repeats of earlier material. The first movement of the Quartet Sonata offers a particularly transparent example of a work whose form is created through the setting-in-motion of certain processes of change, with little or no

reference to existing formal types.

Carter's approach to thematicism is inextricably bound up with formal issues. An evolutionary formal process requires adaptable thematic material; brief, sharply characterized motives, rather than fully-fledged themes, and rows of pitches with variable rhythmic values are Carter's favoured resources during this period. In the later works of the period, there is often a certain "neutrality" to the compositional materials used; the polyrhythmic counterpoint of passages in the Cello Sonata, the Quartet Sonata and the First Quartet is created through superimposing streams of pitches moving in equal note values, many of which fall into quasi-scalic or quasi-arpeggio patterns. This has the effect of diverting attention from the actual pitch-content of the passage to the rhythmic processes.

The end result of this study is to show that Carter's works of 1945-55 throw up a particularly rich nexus of compositional and analytical issues, demanding another new combination of the elements of p-c set theory and neo-Schenkerian analysis, together with considerations of other factors peculiar to the composer.

APPENDIX 1: Cross-Reference of Carter's Listing of Three- to Six-Note Chords with Forte's List of Prime Forms of Pitch-Class Sets

Carter numbering	p-c ordering	Forte numbering
3-1	[0,4,8]	3-12
3-2	[0,3,6]	3-10
3-3	[0,2,4]	3-6
3-4	[0,1,2]	3-1
3-5	[0,2,7]	3-9
3-6	[0,3,7]	3-11
3-7	[0,1,6]	3-5
3-8	[0,2,6]	3-8
3-9	[0,1,5]	3-4
3-10	[0,2,5]	3-7
3-11	[0,1,4]	3-3
3-12	[0,1,3]	3-2
4-1	[0,1,2,3]	4-1
4-2	[0,1,6,7]	4-9
4-3	[0,2,3,5]	4-10
4-4	[0,2,5,7]	4-23
4-5	[0,3,6,9]	4-28
4-6	[0,1,2,7]	4-6
4-7	[0,1,3,6]	4-13
4-8	[0,1,4,5]	4-7
4-9	[0,1,3,4]	4-3
4-10	[0,1,5,6]	4-8
4-11	[0,2,4,6]	4-21
4-12	[0,2,6,8]	4-25
4-13	[0,3,4,7]	4-17
4-14	[0,3,5,8]	4-26
4-15	[0,1,5,8]	4-20
4-16	[0,2,4,8]	4-24
4-17	[0,1,2,4]	4-2
4-18	[0,1,4,6]	4-Z15
4-19	[0,1,5,7]	4-16
4-20	[0,1,2,5]	4-4
4-21	[0,1,4,7]	4-18
4-22	[0,1,2,6]	4-5
4-23	[0,1,3,7]	4-Z29
4-24	[0,3,4,8]	4-19
4-25	[0,2,3,7]	4-14
4-26	[0,1,3,5]	4-11
4-27	[0,2,4,7]	4-22
4-28	[0,2,3,6]	4-12
4-29	[0,2,5,8]	4-27

Carter numbering	p-c ordering	Forte numbering
5-1	[0,1,2,3,4]	5-1
5-2	[0,2,3,4,6]	5-8
5-3	[0,3,4,5,8]	5-Z37
5-4	[0,1,2,6,8]	5-15
5-5	[0,1,3,5,6]	5-Z12
5-6	[0,2,4,6,8]	5-33
5-7	[0,2,4,7,9]	5-35
5-8	[0,1,4,7,8]	5-22
5-9	[0,2,4,6,9]	5-34
5-10	[0,1,3,4,8]	5-Z17
5-11	[0,1,2,3,5]	5-2
5-12	[0,1,2,3,6]	5-4
5-13	[0,1,2,3,7]	5-5
5-14	[0,1,2,4,5]	5-3
5-15	[0,1,2,4,6]	5-9
5-16	[0,1,2,4,7]	5-Z36
5-17	[0,1,2,4,8]	5-13
5-18	[0,2,3,4,7]	5-11
5-19	[0,1,3,4,6]	5-10
5-20	[0,1,3,4,7]	5-16
5-21	[0,1,4,5,8]	5-21
5-22	[0,1,3,5,7]	5-24
5-23	[0,1,3,5,8]	5-27
5-24	[0,2,3,5,8]	5-25
5-25	[0,2,3,5,7]	5-23
5-26	[0,2,4,5,8]	5-26
5-27	[0,1,2,5,6]	5-6
5-28	[0,1,2,5,7]	5-14
5-29	[0,1,2,5,8]	5-Z38
5-30	[0,1,2,6,7]	5-7
5-31	[0,1,3,6,7]	5-19
5-32	[0,1,3,6,8]	5-29
5-33	[0,1,3,6,9]	5-31
5-34	[0,1,3,7,8]	5-20
5-35	[0,1,4,5,7]	5-Z18
5-36	[0,2,3,6,8]	5-28
5-37	[0,1,4,6,8]	5-30
5-38	[0,1,4,6,9]*	5-32

*In [Schiff 1983] this set appears as [0,1,4,7,9]. However, the true prime form of the latter is [0,2,3,4,7], making it identical with Carter's 5-18 or Forte's 5-11.

Carter numbering	p-c ordering	Forte numbering	prime form (if different from Carter's ordering)
6-1	[0,2,4,6,8,10]	6-35	
6-2	[0,1,4,5,8,9]	6-20	
6-3	[0,1,3,4,5,8]	6-14	
6-4	[0,1,2,3,4,5]	6-1	
6-5	[0,2,3,4,5,7]	6-8	
6-6	[0,2,4,5,7,9]	6-32	
6-7	[0,1,2,6,7,8]	6-7	
6-8	[0,1,4,5,7,9]	6-31	
6-9	[0,1,3,5,7,9]	6-34	
6-10	[0,1,2,4,6,8]	6-22	
6-11	[0,1,4,5,6,8]	6-16	
6-12	[0,2,3,4,6,8]	6-21	
6-13	[0,1,2,4,5,8]	6-15	
6-14	[0,2,3,5,6,9]	6-27	[0,1,3,4,6,9]
6-15	[0,1,3,6,7,9]	6-30	
6-16	[0,1,2,3,6,7]	6-5	
6-17	[0,1,2,5,7,8]	6-18	
6-18	[0,2,3,5,7,9]	6-33	
6-19	[0,1,2,3,4,6]	6-2	
6-20	[0,1,2,3,5,7]	6-9	
6-21	[0,1,3,5,6,9]	6-Z28	
6-22	[0,1,3,4,7,9]	6-Z49	
6-23	[0,1,2,3,4,8]	6-Z37	
6-24	[0,1,2,4,5,6]	6-Z4	
6-25	[0,1,2,5,7,9]	6-Z48	
6-26	[0,1,3,5,7,8]	6-Z26	
6-27	[0,2,3,5,6,8]	6-Z23	
6-28	[0,2,3,4,6,9]	6-Z45	
6-29	[0,1,3,4,6,7]	6-Z13	
6-30	[0,1,2,3,6,9]	6-Z42	
6-31	[0,1,4,6,7,9]	6-Z50	
6-32	[0,1,3,6,8,9]	6-Z29	
6-33	[0,1,2,5,6,7]	6-Z6	
6-34	[0,1,2,3,7,8]	6-Z38	
6-35	[0,1,2,4,7,8]	6-Z17	
6-36	[0,1,2,5,6,8]	6-Z43	
6-37	[0,1,3,4,7,8]	6-Z19	
6-38	[0,1,2,5,6,9]	6-Z44	
6-39	[0,1,3,4,6,8]	6-Z24	
6-40	[0,1,2,4,6,9]	6-Z46	
6-41	[0,2,3,4,5,8]	6-Z39	
6-42	[0,1,3,4,5,7]	6-Z10	
6-43	[0,1,3,5,6,8]	6-Z25	

Carter numbering	p-c ordering	Forte numbering
6-44	[0,1,2,4,7,9]	6-Z47
6-45	[0,1,2,3,6,8]	6-Z41
6-46	[0,1,2,4,6,7]	6-Z12
6-47	[0,1,2,4,5,7]	6-Z11
6-48	[0,1,2,3,5,8]	6-Z40
6-49	[0,1,2,3,5,6]	6-Z3
6-50	[0,1,2,3,4,7]	6-Z36

APPENDIX 2: Classification of Diatonic Sets

TYPE A

5-35 [0,2,4,7,9]

Subsets:

Trichords:

3-6 [0,2,4]
3-7 [0,2,5]
3-9 [0,2,7]
3-11 [0,3,7]

Tetrachords:

4-22 [0,2,4,7]
4-23 [0,2,5,7]
4-26 [0,3,5,8]

TYPE B

6-32 [0,2,4,5,7,9]

Subsets:

Trichords:

as for 5-35 +
3-2 [0,1,3]
3-4 [0,1,5]

Tetrachords:

as for 5-35 +
4-10 [0,2,3,5]
4-11 [0,1,3,5]
4-14 [0,2,3,7]
4-20 [0,1,5,8]

Pentachords:

5-35 +
5-23 [0,2,3,5,7]
5-27 [0,1,3,5,8]

TYPE C

7-35 [0,1,3,5,6,8,10]

Subsets:

Trichords:

as for 6-32 +
3-5 [0,1,6]
3-8 [0,2,6]
3-10 [0,3,6]

Tetrachords:

as for 6-32 +
4-8 [0,1,5,6]
4-13 [0,1,3,6]
4-16 [0,1,5,7]
4-21 [0,2,4,6]
4-27 [0,2,5,8]
4-Z29 [0,1,3,7]

Pentachords:

as for 6-32 +
5-Z12 [0,1,3,5,6]
5-20 [0,1,3,7,8]
5-24 [0,1,3,5,7]
5-25 [0,2,3,5,8]
5-29 [0,1,3,6,8]
5-34 [0,2,4,6,9]

Hexachords:

6-32 +
6-Z25 [0,1,3,5,6,8]
6-Z26 [0,1,3,5,7,8]
6-33 [0,2,3,5,7,9]

APPENDIX 3: Formation of Tetrachords from Pairs of Non-overlapping Dyads

ic1 + ic1

ic and pc structure	set	interval vector
1 3 |1|{ }|1| 0 2	4-1	[321000]
1 4 |1|{ }|1| 0 3	4-3	[212100]
1 5 |1|{ }|1| 0 4	4-7	[201210]
1 6 |1|{ }|1| 0 5	4-8	[200121]
1 7 |1|{ }|1| 0 6	4-9	[200022]

ic2 + ic2

ic and pc structure	set	interval vector
2 3 |2|{ }|2| 0 1	4-1	[321000]
2 5 |2|{ }|2| 0 3	4-10	[122010]
2 6 |2|{ }|2| 0 4	4-21	[030201]
2 7 |2|{ }|2| 0 5	4-23	[021030]
2 8 |2|{ }|2| 0 6	4-25	[020202]

ic3 + ic3

ic and pc structure	set	interval vector
3 4 |3|{ }|3| 0 1	4-3	[212100]
3 5 |3|{ }|3| 0 2	4-10	[122010]
3 7 |3|{ }|3| 0 4	4-17	[102210]
3 8 |3|{ }|3| 0 5	4-26	[012120]
3 9 |3|{ }|3| 0 6	4-28	[004002]

ic4 + ic4

ic and pc structure	set	interval vector
4 5 |4|{ }|4| 0 1	4-7	[201210]
4 7 |4|{ }|4| 0 3	4-17	[102210]
0 5 |4|{ }|4| 8 1	4-20	[101220]
4 6 |4|{ }|4| 0 2	4-21	[030201]
0 6 |4|{ }|4| 8 2	4-25	[020202]

ic5 + ic5

ic and pc structure	set	interval vector
5 6 |5|{ }|5| 0 1	4-8	[200121]
0 6 |5|{ }|5| 7 1	4-9	[200022]
5 1 |5|{ }|5| 0 8	4-20	[101220]
5 7 |5|{ }|5| 0 2	4-23	[021030]
5 8 |5|{ }|5| 0 3	4-26	[012120]

ic6 + ic6

ic and pc structure	set	interval vector
6 7 |6|{ }|6| 0 1	4-9	[200022]
6 8 |6|{ }|6| 0 2	4-25	[020202]
6 9 |6|{ }|6| 0 3	4-28	[004002]

ic1 + ic2

ic and pc structure	set	interval vector
1 4 |1|{ }|2| 0 2	4-2	[221100]
1 5 |1|{ }|2| 0 3	4-11	[121110]
1 6 |1|{ }|2| 0 4	4-Z15	[111111]
1 7 |1|{ }|2| 0 5	4-16	[110121]

ic1 + ic3

ic and pc structure	set	interval vector
2 3 |1|{ }|3| 1 0	4-1	[321000]
1 5 |1|{ }|3| 0 2	4-4	[211110]
1 6 |1|{ }|3| 0 3	4-13	[112011]
1 7 |1|{ }|3| 0 4	4-18	[102111]
1 8 |1|{ }|3| 0 5	4-20	[101220]

ic1 + ic4

ic and pc structure	set	interval vector
2 4 |1|{ }|4| 1 0	4-2	[221100]
1 6 |1|{ }|4| 0 2	4-5	[211110]
1 8 |1|{ }|4| 0 4	4-19	[101310]
1 7 |1|{ }|4| 0 3	4-Z29	[111111]

ic1 + ic5

ic and pc structure	set	interval vector
2 5 |1|{ }|5| 1 0	4-4	[211110]
1 7 |1|{ }|5| 0 2	4-6	[210021]
3 5 |1|{ }|5| 2 0	4-10	[122010]
3 0 |1|{ }|5| 2 7	4-14	[111120]
4 0 |1|{ }|5| 3 7	4-17	[102210]

ic1 + ic6

ic and pc structure	set	interval vector
2 6 |1|{ }|6| 1 0	4-5	[210111]
3 6 |1|{ }|6| 2 0	4-12	[112101]

ic2 + ic3

ic and pc structure	set	interval vector
2 4 |2|{ }|3| 0 1	4-2	[221100]
2 6 |2|{ }|3| 0 3	4-12	[112101]
2 7 |2|{ }|3| 0 4	4-22	[021120]
2 8 |2|{ }|3| 0 5	4-27	[012111]

ic2 + ic4

ic and pc structure	set	interval vector
3 4 |2|{ }|4| 1 0	4-3	[212100]
2 5 |2|{ }|4| 0 1	4-4	[211110]
2 7 |2|{ }|4| 0 3	4-14	[111120]
2 8 |2|{ }|4| 0 4	4-24	[020301]
5 0 |2|{ }|4| 3 8	4-26	[012120]

ic2 + ic5

ic and pc structure	set	interval vector
2 6 |2|{ }|5| 0 1	4-5	[210111]
3 5 |2|{ }|5| 1 0	4-11	[121110]
4 0 |2|{ }|5| 2 7	4-22	[021120]
3 0 |2|{ }|5| 1 7	4-Z29	[111111]

ic2 + ic6

ic and pc structure	set	interval vector
2 7 |2|{ }|6| 0 1	4-6	[210021]
3 6 |2|{ }|6| 1 0	4-13	[112011]
4 6 |2|{ }|6| 2 0	4-21	[030201]

ic3 + ic4

ic and pc structure	set	interval vector
3 5 |3|{ }|4| 0 1	4-11	[121110]
3 6 |3|{ }|4| 0 2	4-12	[112101]
4 0 |3|{ }|4| 1 8	4-19	[101310]
5 0 |3|{ }|4| 2 8	4-27	[012111]

ic3 + ic5

ic and pc structure	set	interval vector
4 5 |3|{ }|5| 1 0	4-7	[201210]
3 6 |3|{ }|5| 0 1	4-13	[112011]
3 7 |3|{ }|5| 0 2	4-14	[111120]
4 0 |3|{ }|5| 1 7	4-18	[102111]
5 0 |3|{ }|5| 2 7	4-23	[021030]

ic3 + ic6

ic and pc structure	set	interval vector
4 6 |3|{ }|6| 1 0	4-Z15	[111111]
3 7 |3|{ }|6| 0 1	4-Z29	[111111]

ic4 + ic5

ic and pc structure	set	interval vector
4 6 |4|{ }|5| 0 1	4-Z15	[111111]
5 0 |4|{ }|5| 1 7	4-16	[110121]
4 1 |4|{ }|5| 0 8	4-19	[101310]
4 7 |4|{ }|5| 0 2	4-22	[021120]

ic4 + ic6

ic and pc structure	set	interval vector
5 6 |4|{ }|6| 1 0	4-8	[200121]
4 7 |4|{ }|6| 0 1	4-18	[102111]
4 8 |4|{ }|6| 0 2	4-24	[020301]

ic5 + ic6

ic and pc structure	set	interval vector
5 7 |5|{ }|6| 0 1	4-16	[110121]
5 8 |5|{ }|6| 0 2	4-27	[012111]

Set	Possible	intervallic	combinations
4-1	1+1	1+3	2+2
4-2	1+2	1+4	2+3
4-3	1+1	2+4	3+3
4-4	1+3	1+5	2+4
4-5	1+4	1+6	2+5
4-6	1+5	2+6	
4-7	1+1	3+5	4+4
4-8	1+1	4+6	5+5
4-9	1+1	5+5	6+6
4-10	1+5	2+2	3+3
4-11	1+2	2+5	3+4
4-12	1+6	2+3	3+4
4-13	1+3	2+6	3+5
4-14	1+5	2+4	3+5
4-Z15	1+2	3+6	4+5
4-16	1+2	4+5	5+6
4-17	1+5	3+3	4+4
4-18	1+3	3+5	4+6
4-19	1+4	3+4	4+5
4-20	1+3	4+4	5+5
4-21	2+2	2+6	4+4
4-22	2+3	2+5	4+5
4-23	2+2	3+5	5+5
4-24	2+4	4+6	
4-25	2+2	4+4	6+6
4-26	2+4	3+3	5+5
4-27	2+3	3+4	5+6
4-28	3+3	6+6	
4-Z29	1+4	2+5	3+6

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Abbreviations:

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MA	*Music Analysis*
MQ	*Musical Quarterly*
MTS	*Music Theory Spectrum*
NCM	*Nineteenth-Century Music*
PNM	*Perspectives of New Music*

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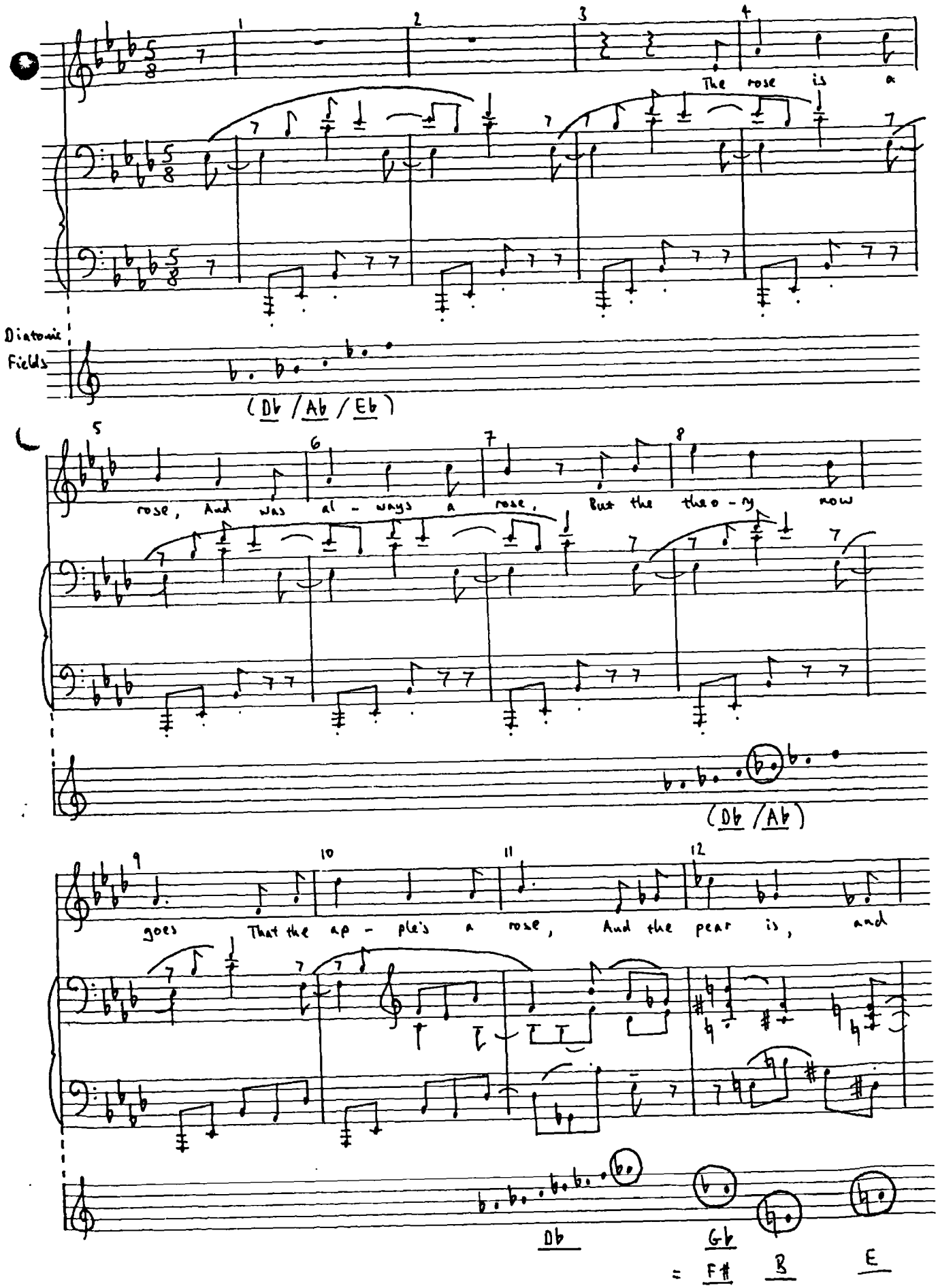
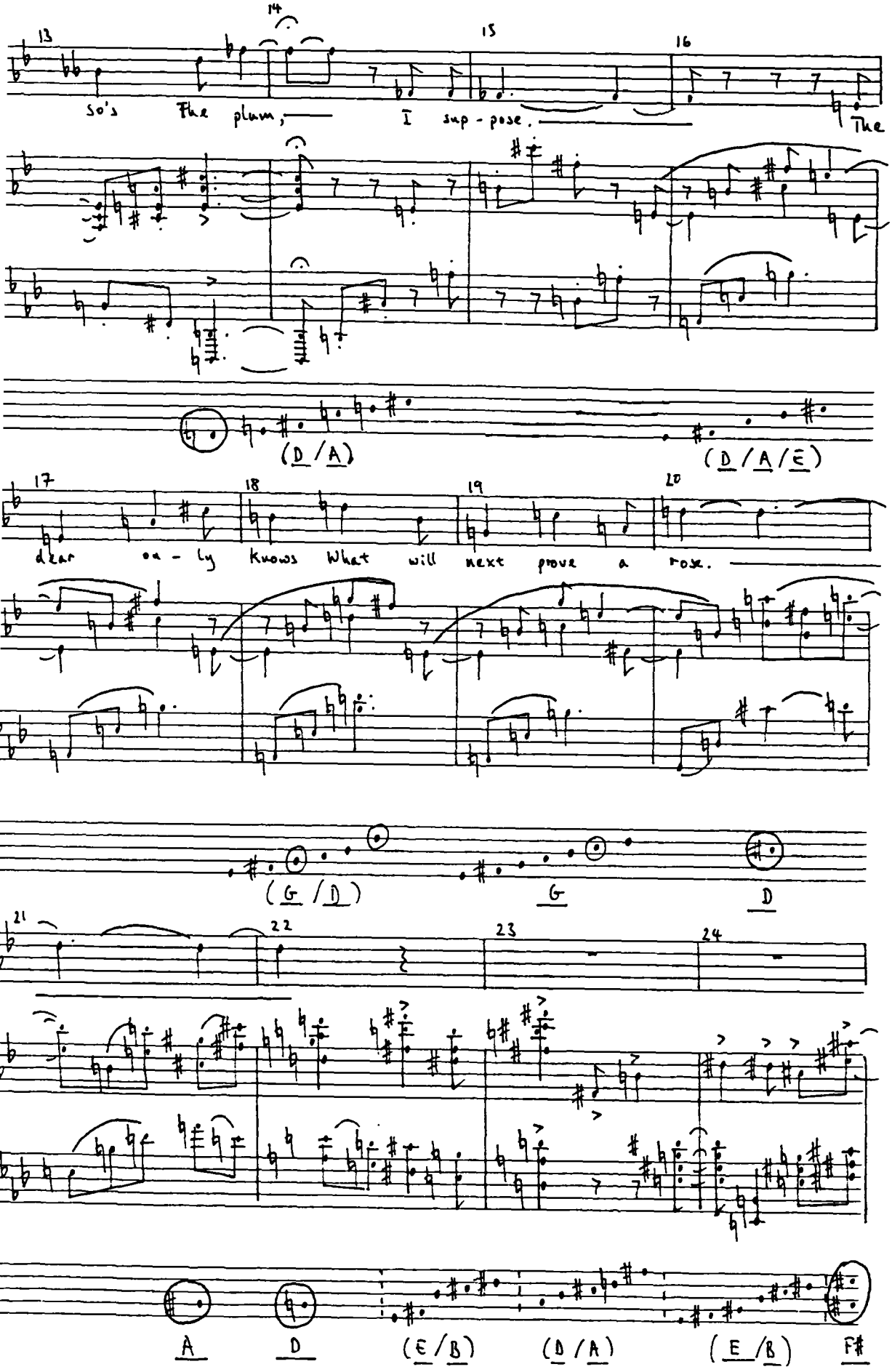
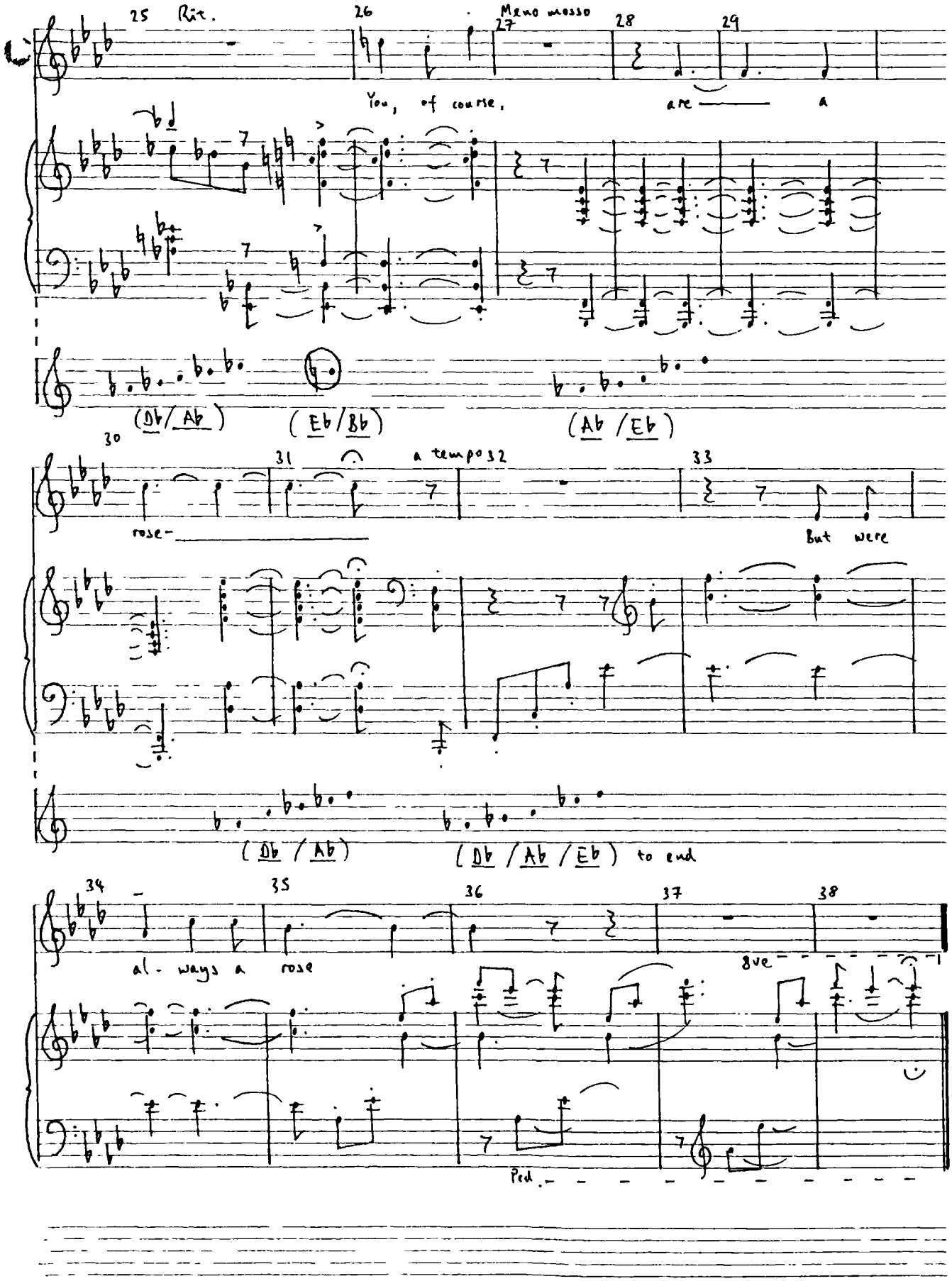
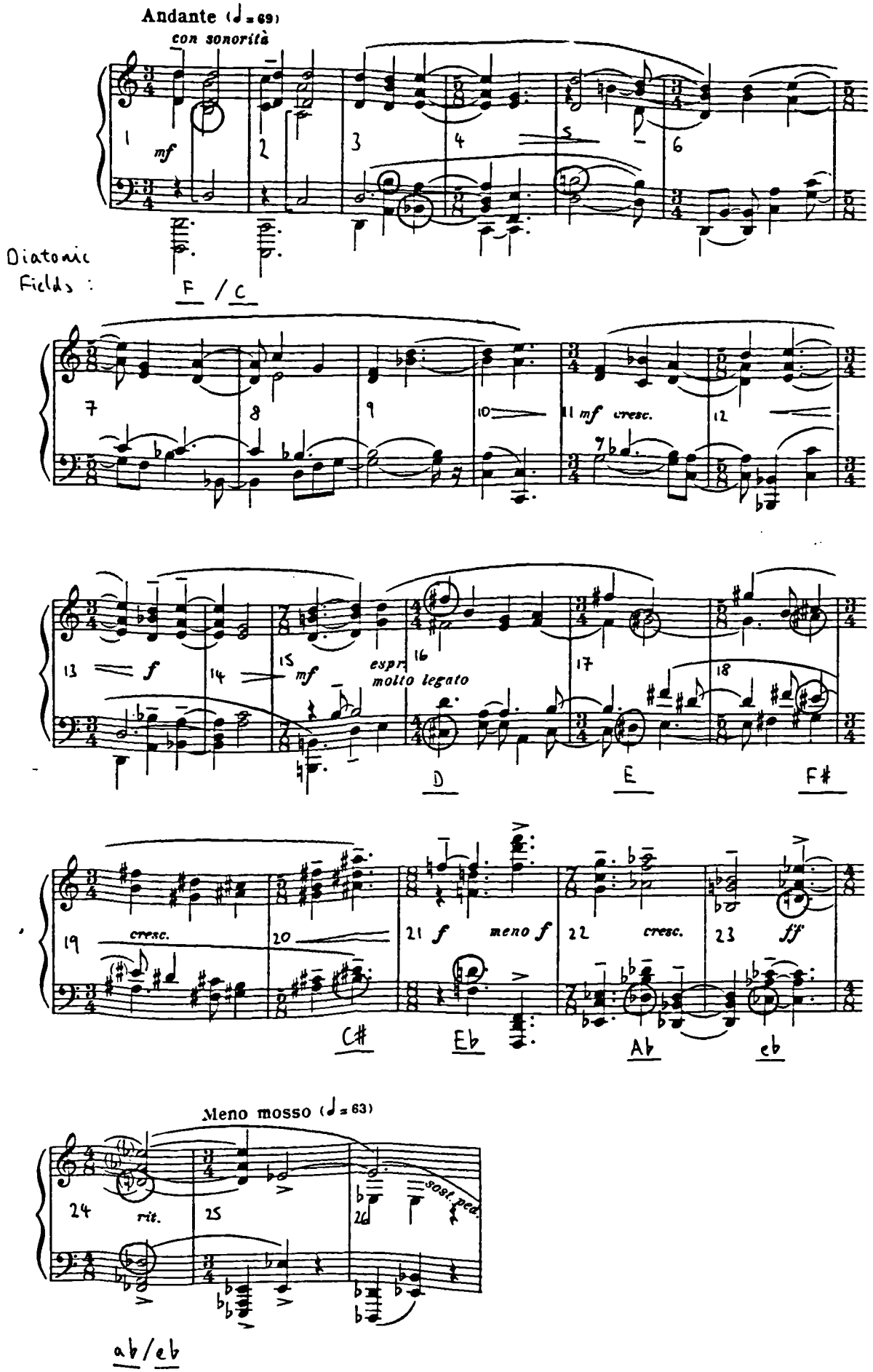

1
2
3
4
The rose is a
Diatonic Fields
(Db / Ab / Eb)
5
6
7
8
rose, And was al - ways a rose, But the theo - ry now
(Db / Ab)
9
10
11
12
goes That the ap - ple's a rose, And the pear is, and
Db
Gb
= F#
B
E

Ex. 4.1 (contd.


13
14
15
16
so's The plum, I sup - pose. The
(D / A)
(D / A / E)
17
18
19
20
dear on - ly knows what will next prove a rose.
(G / D)
G
D
21
22
23
24
A
D
(E / B)
(D / A)
(E / B)
F#

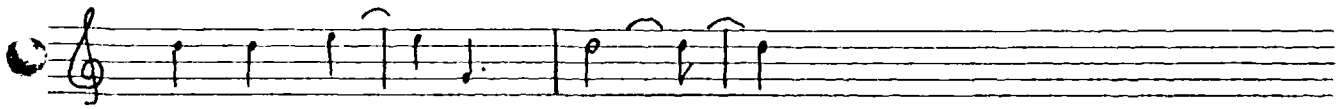

25 Rit.
26
Meno mosso
27
28
29
You, of course, are — a
(Db/Ab) (Eb/Bb) (Ab/Eb)
30
31
a tempo 32
33
rose-
But were
(Db/Ab) (Db/Ab/Eb) to end
34
35
36
37
38
al- ways a rose
8ve
Ped.

Ex. 4.2 Piano Sonata, II, 1-26

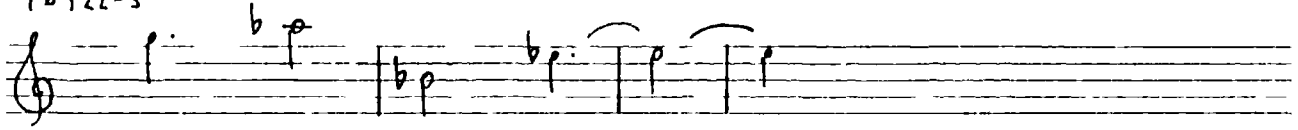


Ex. 4.3 Piano Sonata / II

(a) 3 - 6

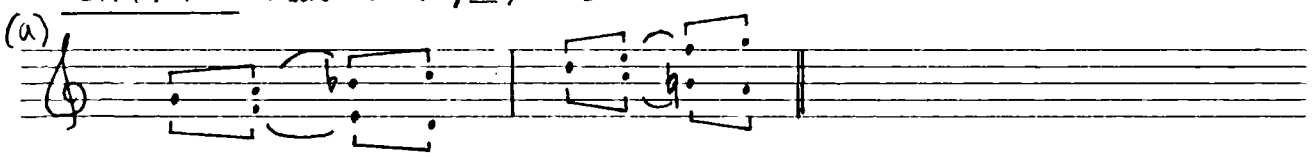


(b) 22 - 5

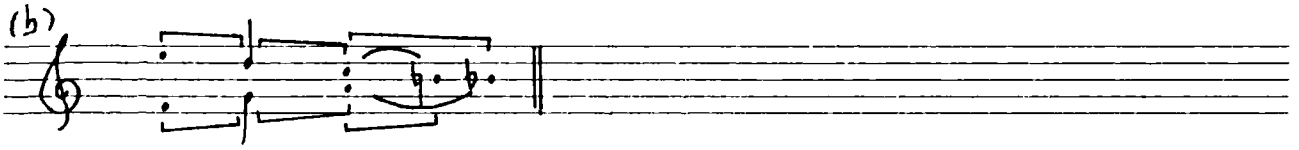


Ex. 4.4 Piano Sonata / II / 1 - 15

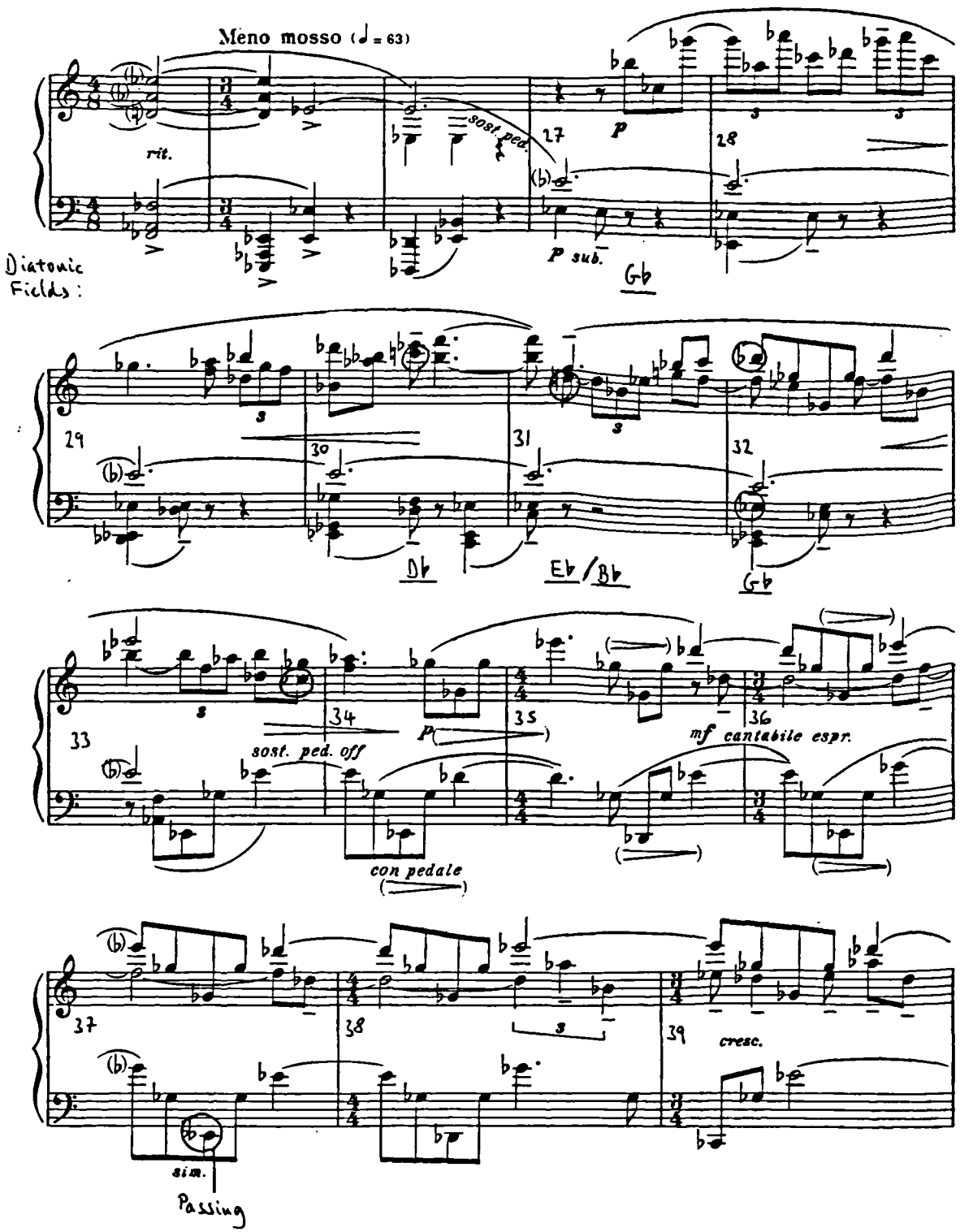
(a)



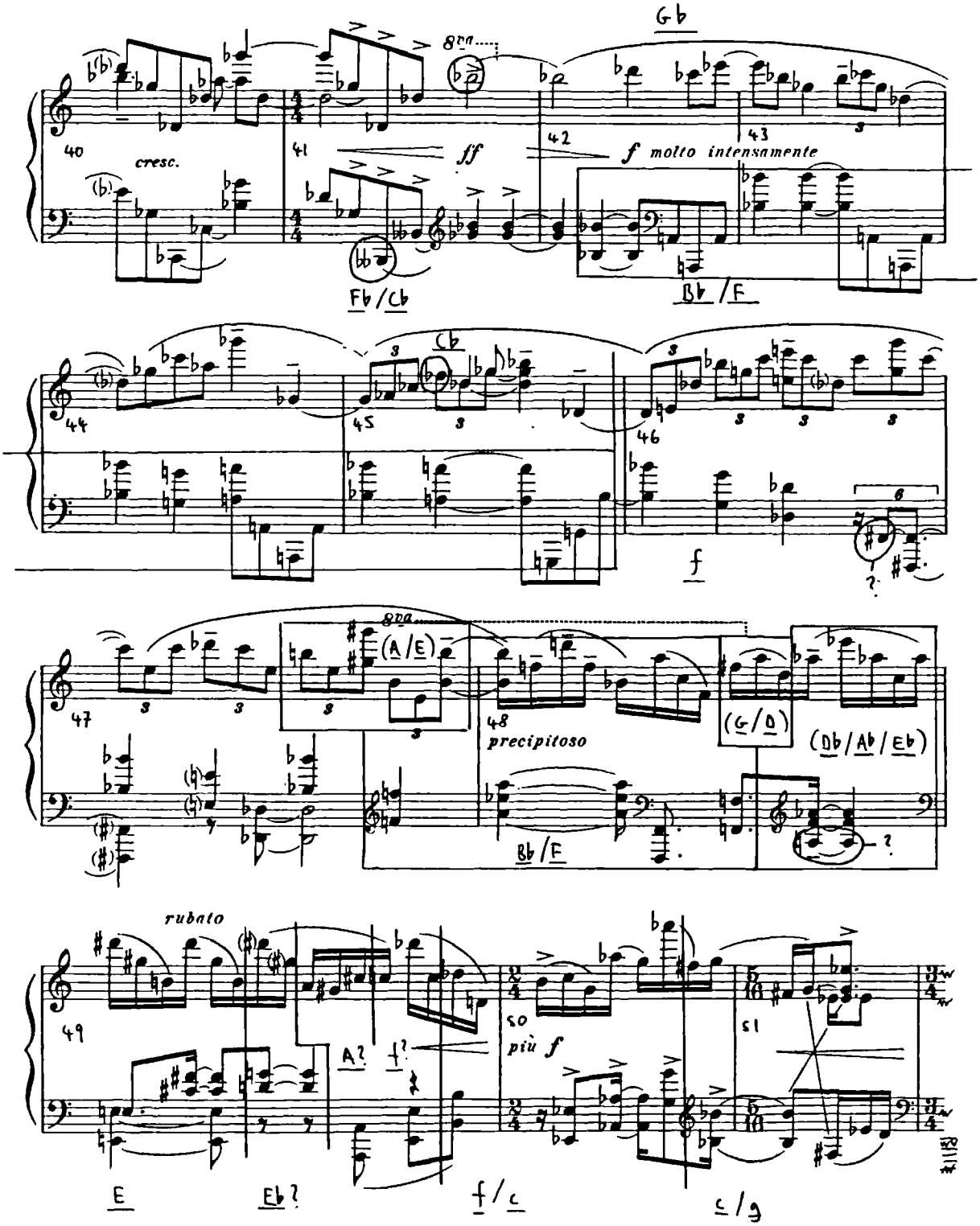
(b)



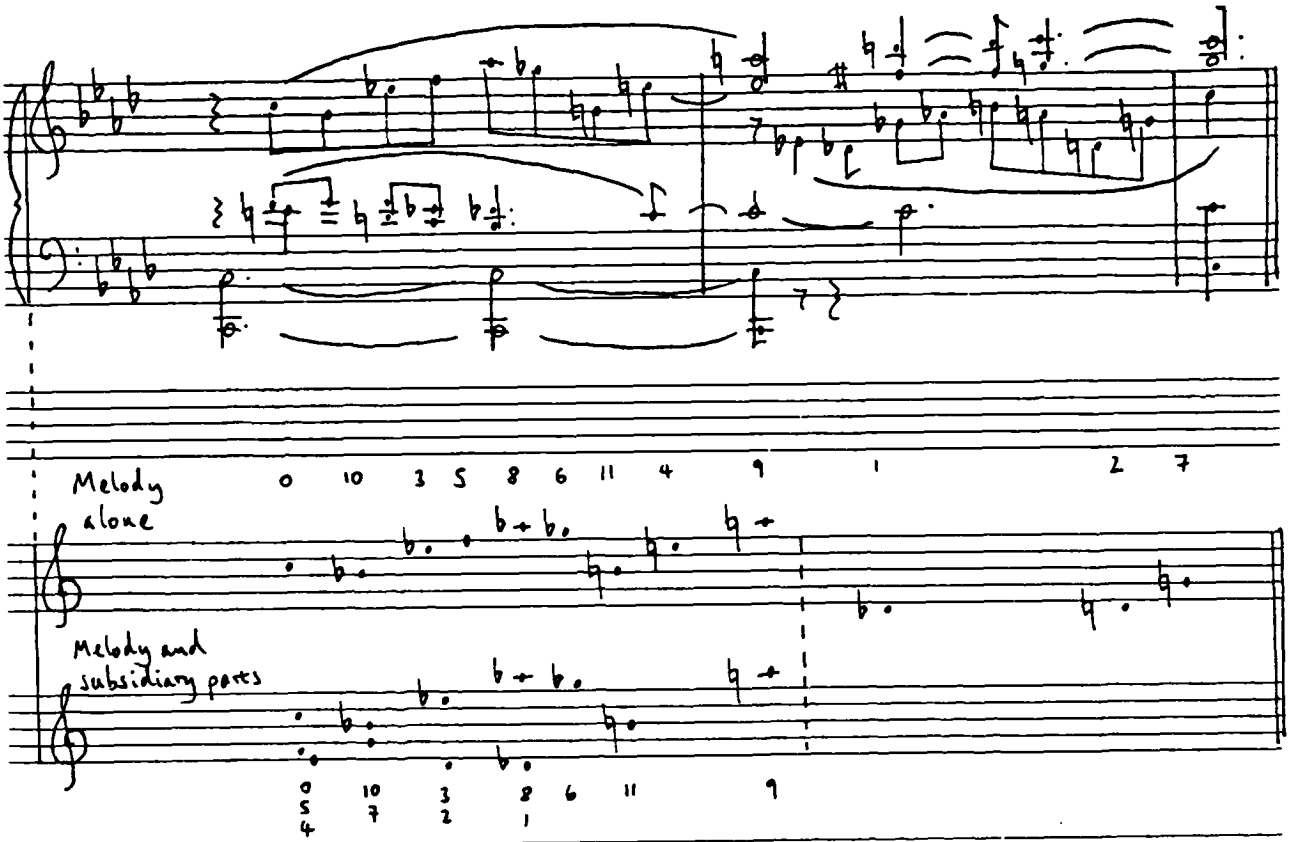
Ex. 4.5 Piano Sonata, II, 27-52



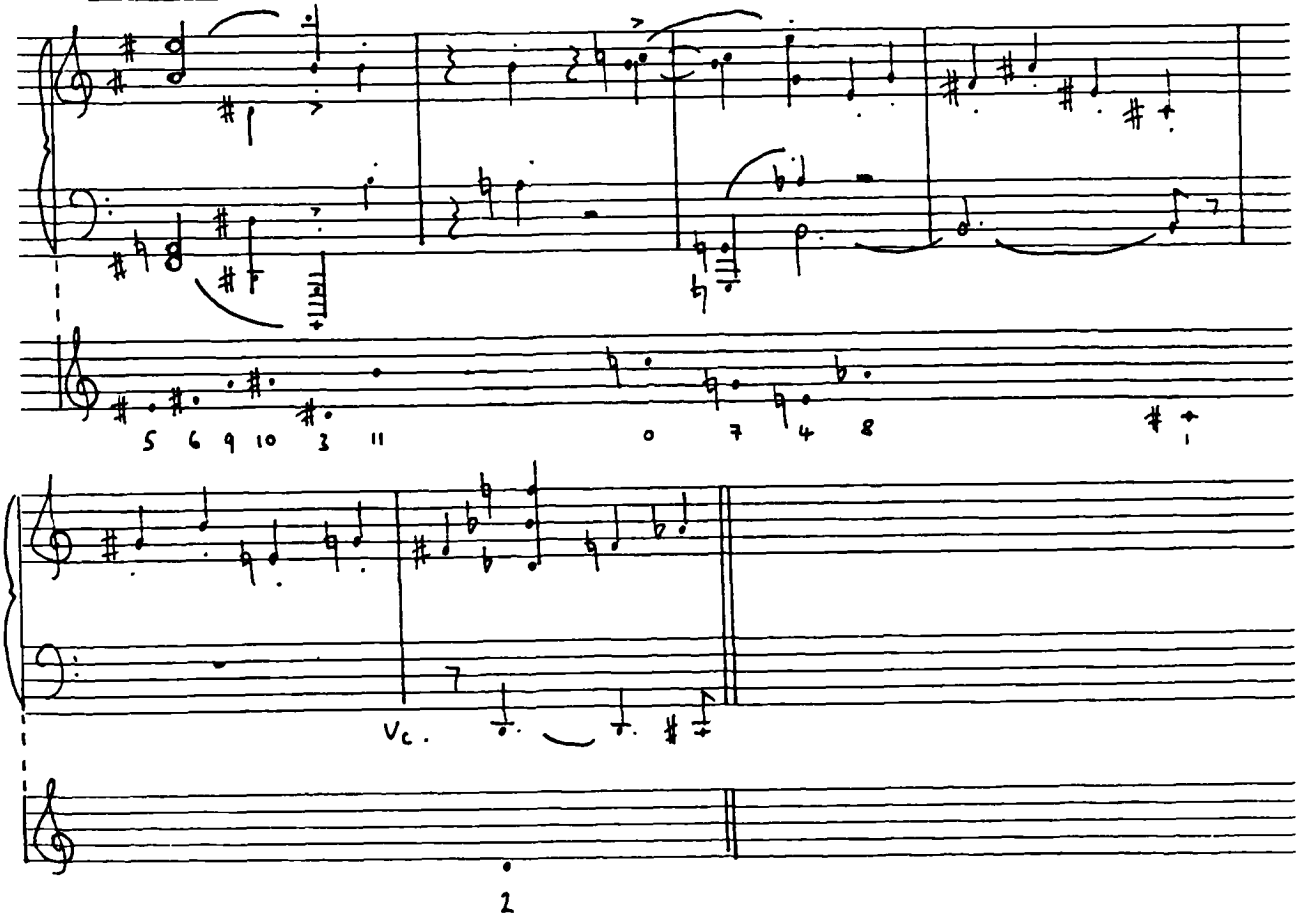
Ex. 4.5 Contd.


Gb
8va
40
cresc.
41
ff
42
f molto intensamente
43
Fb/Cb
Bb/F
44
45
Cb
46
f
47
8va
(A/E)
48
precipitoso
(G/D)
(Db/Ab/Eb)
Bb/F
rubato
49
A?
50
più f
51
E
Eb?
f/c
c/g

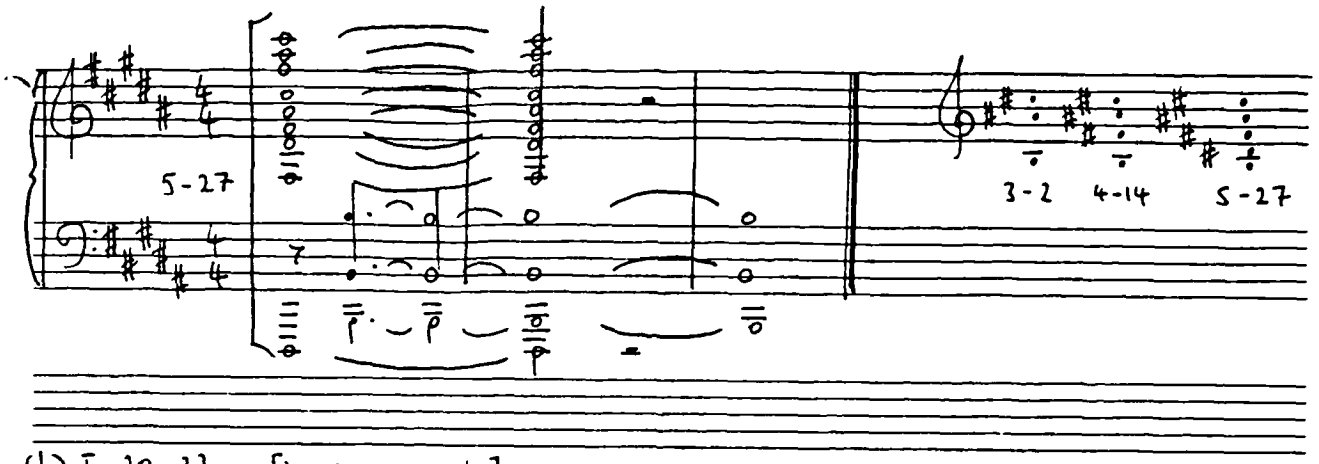
Ex. 4.6 Piano Sonata /I/83-5



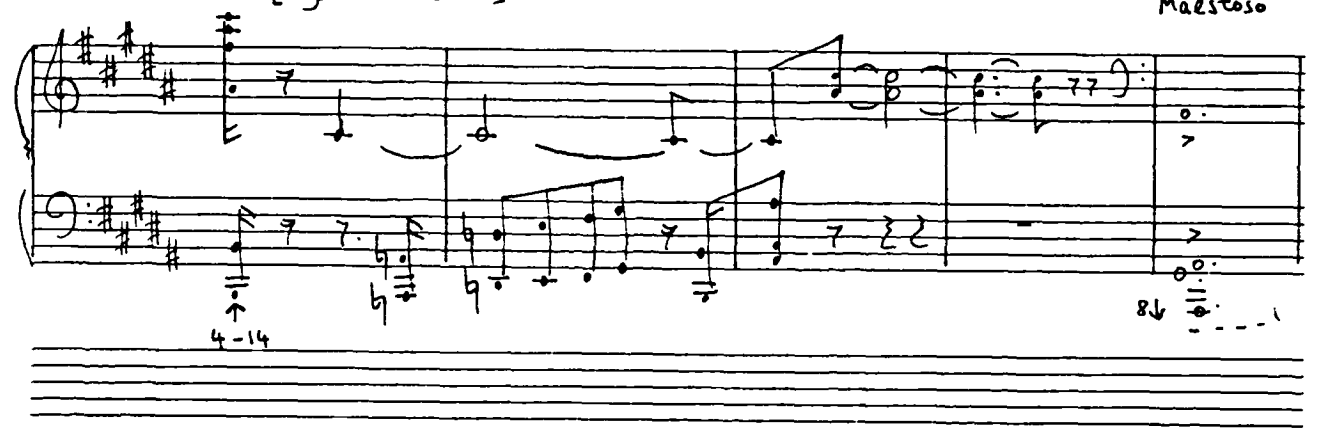
Ex. 4.7 Cello Sonata /I/1-6

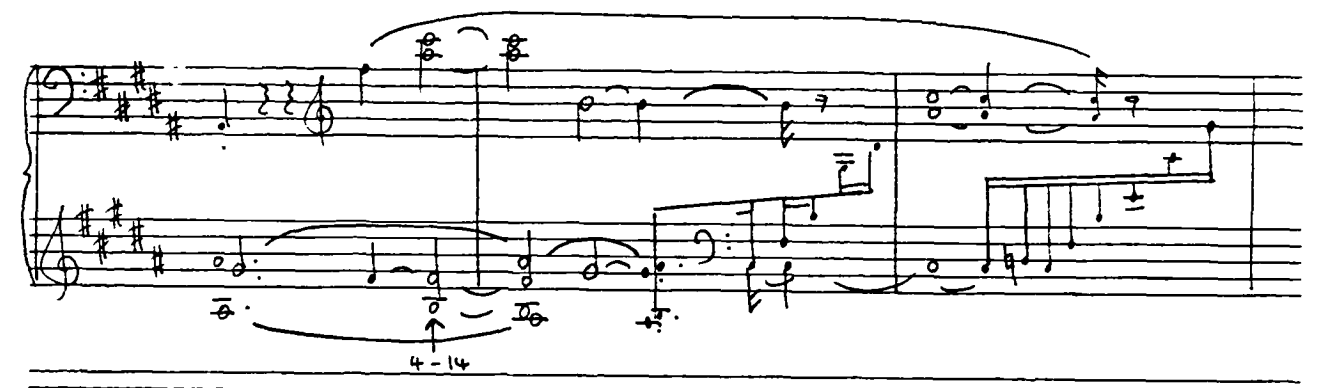


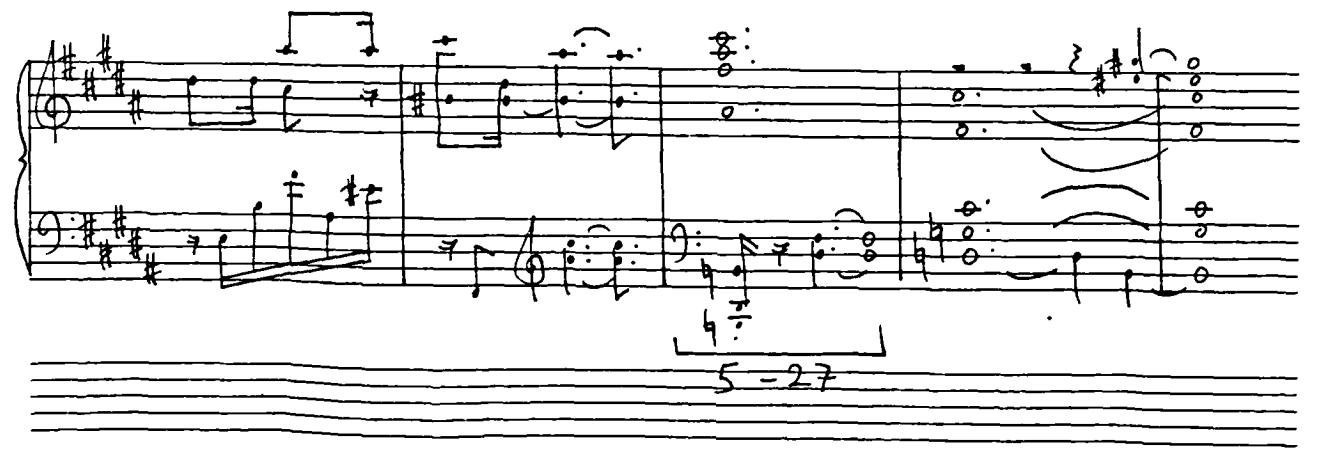
Ex. 5.4 Piano Sonata, (a) II, 412-414



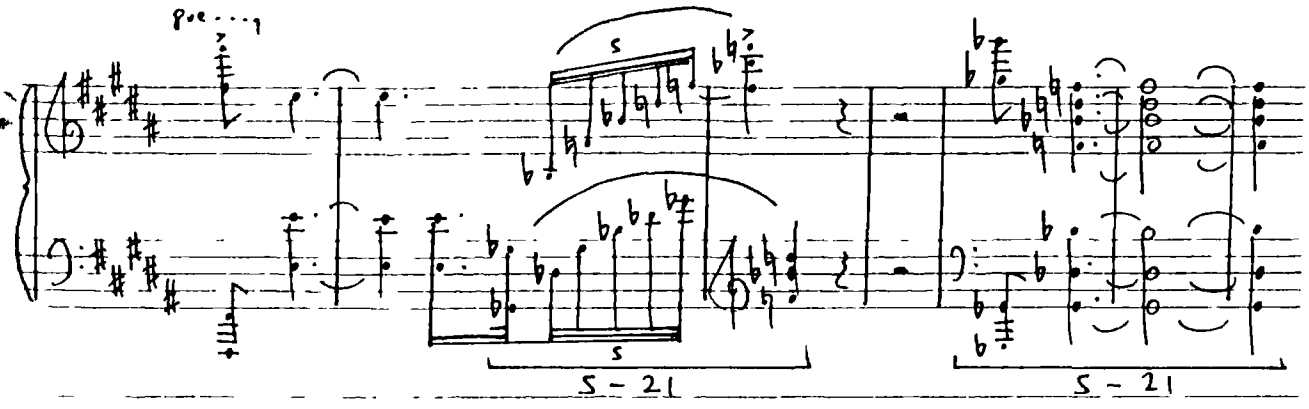
(b) I, 20-32 [legato scorrevole]



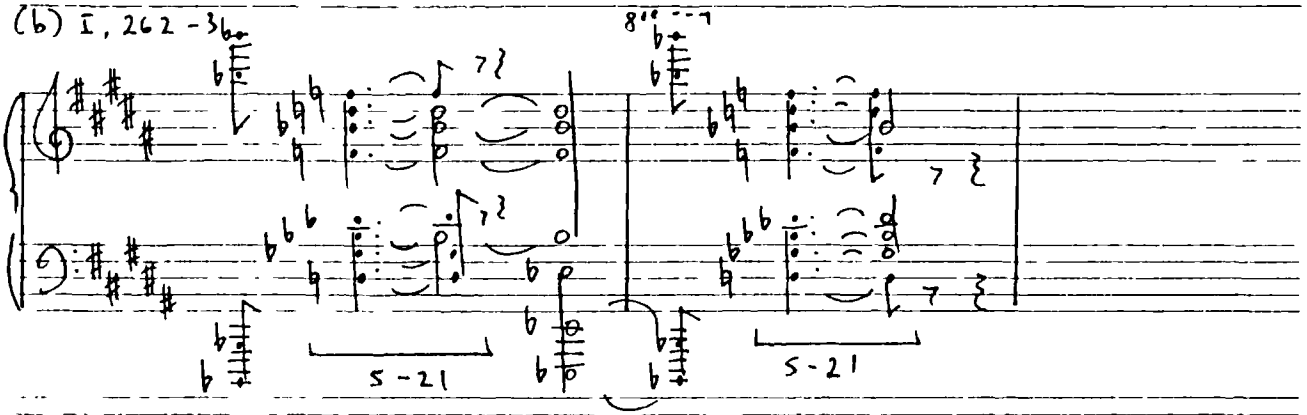




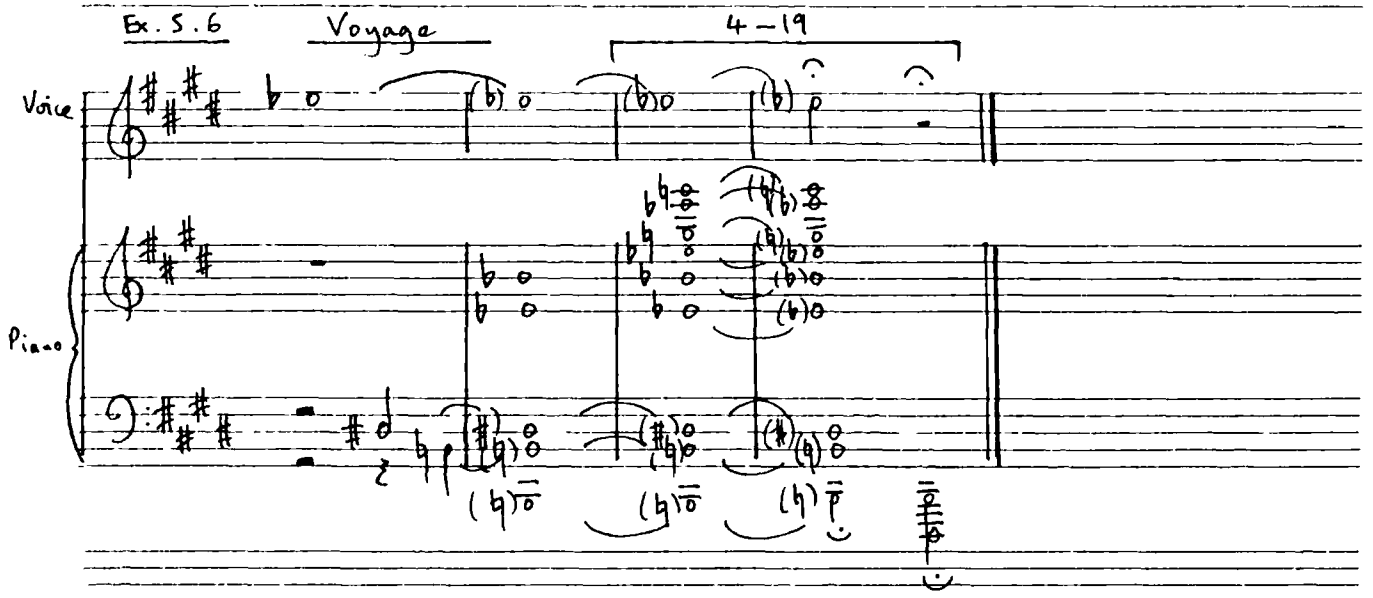
Ex. 5.5 Piano Sonata, (a) I, 245-51



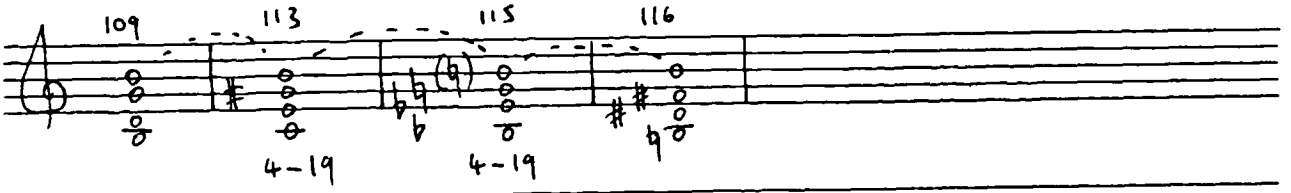
(b) I, 262-3



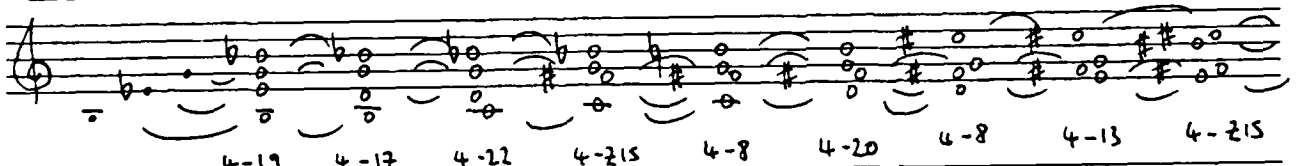
Ex. 5.6 Voyage

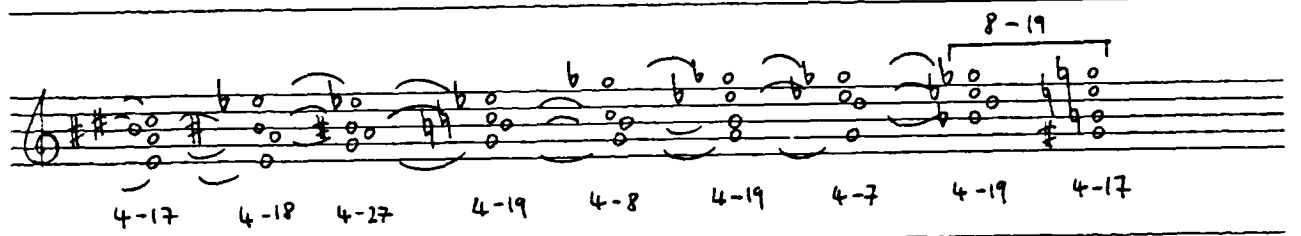


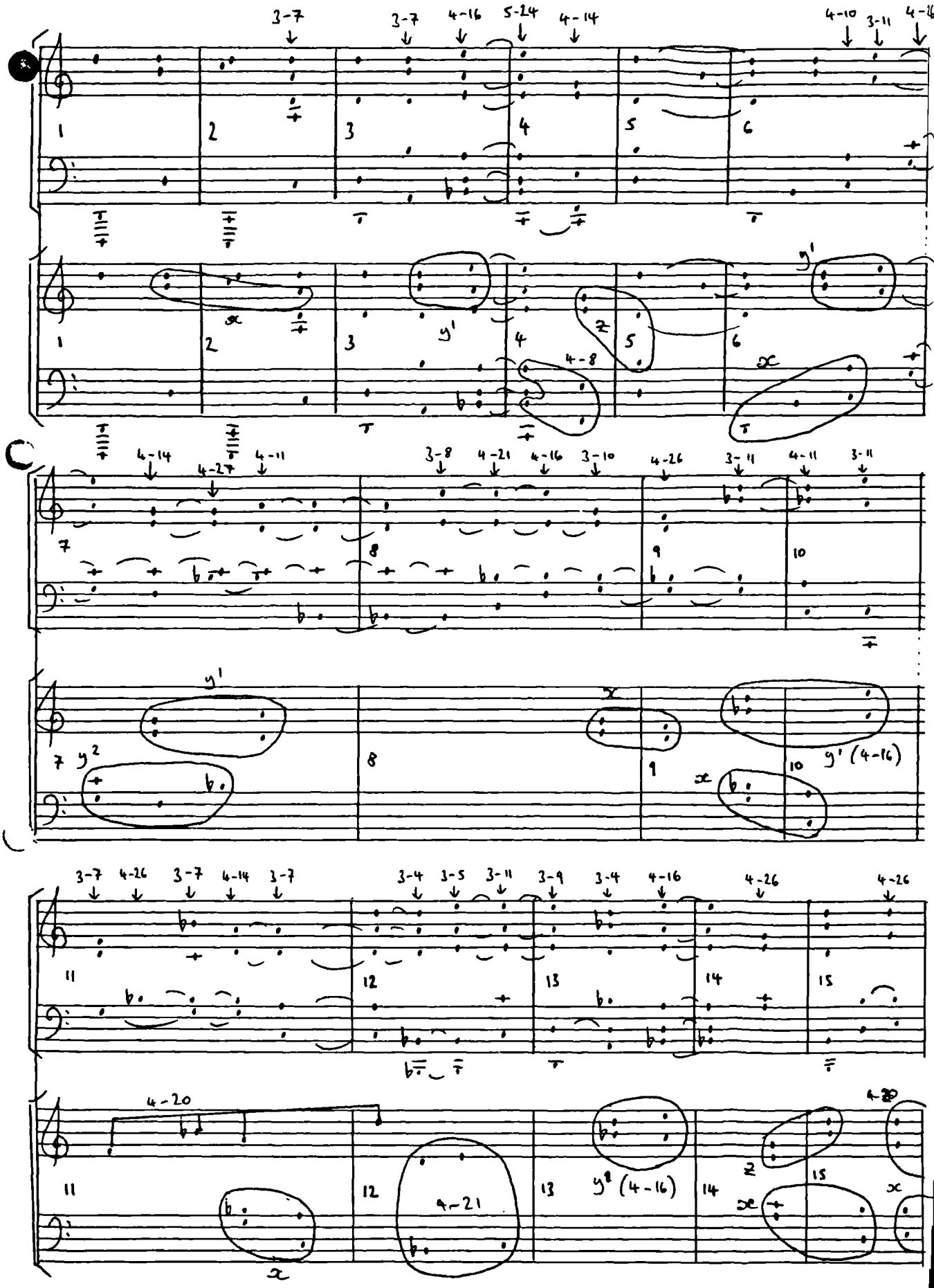
Ex. 5.8 Piano Sonata, I, 109-16 (Reduction)



Ex. 5.9 Quartet Sonata, I, 9-16 (Hpschd.)



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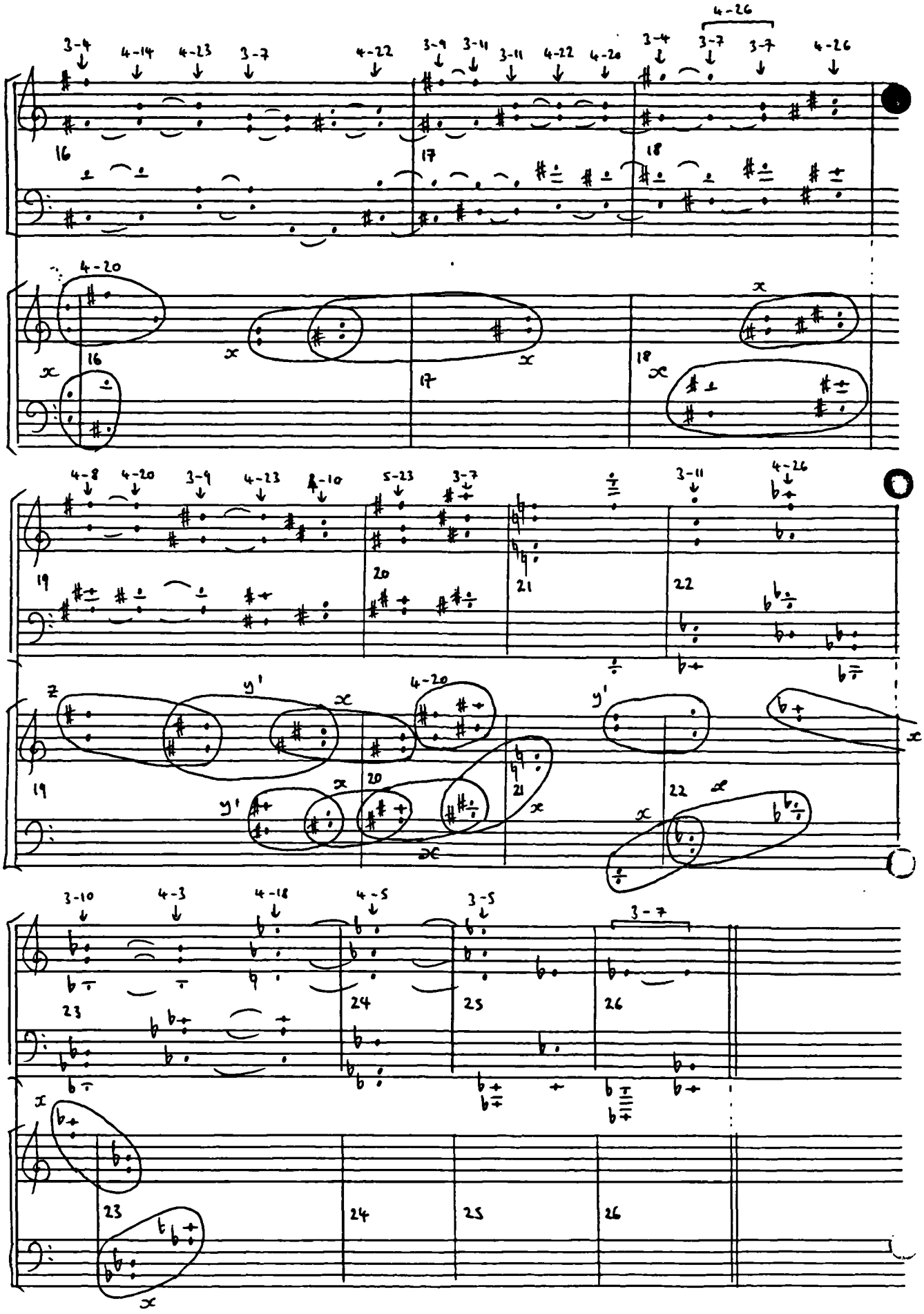
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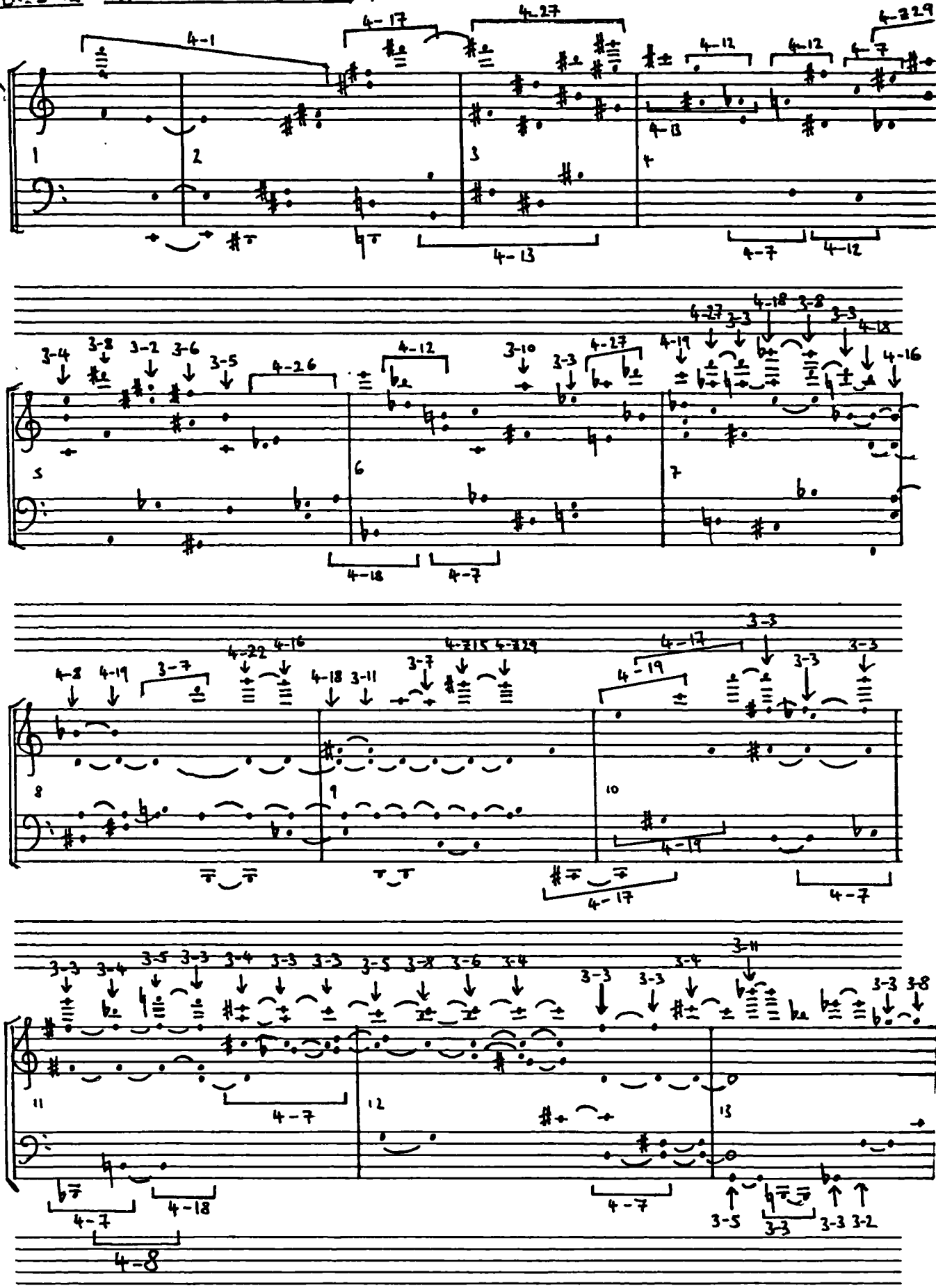
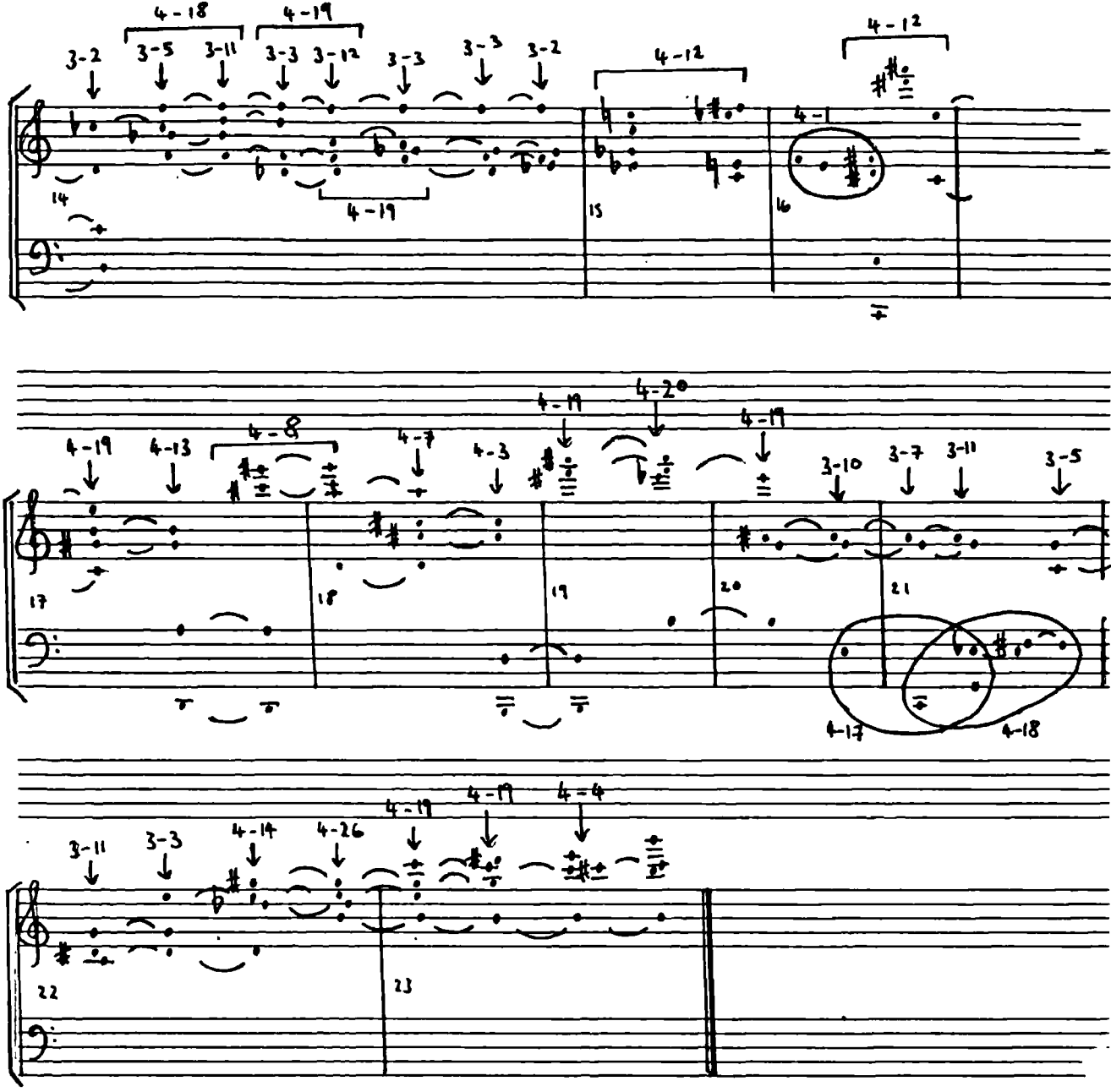
Ex. 5.12 Eight Etudes and a Fantasy, I (Reduction)

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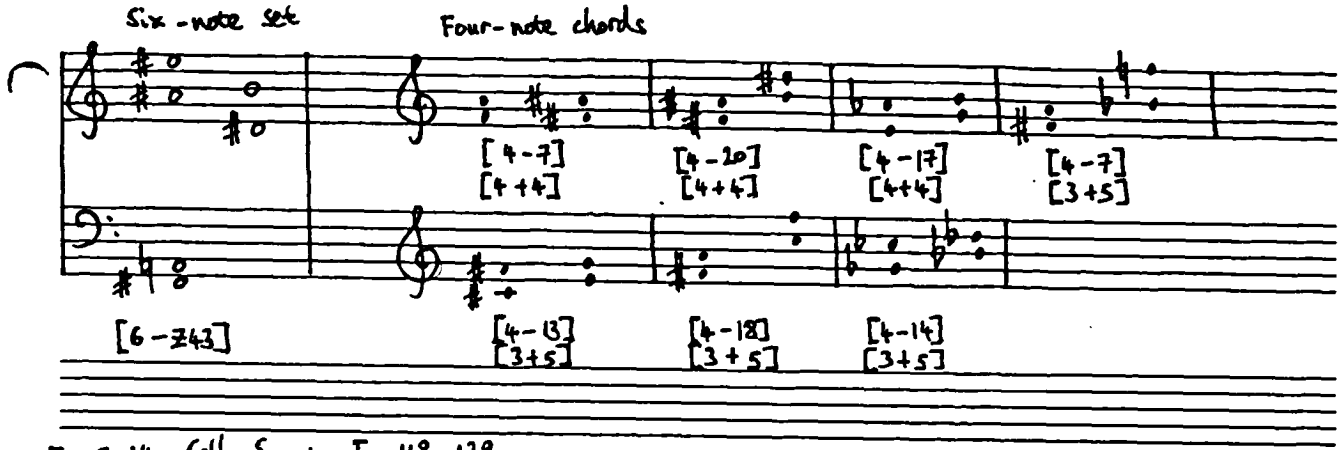
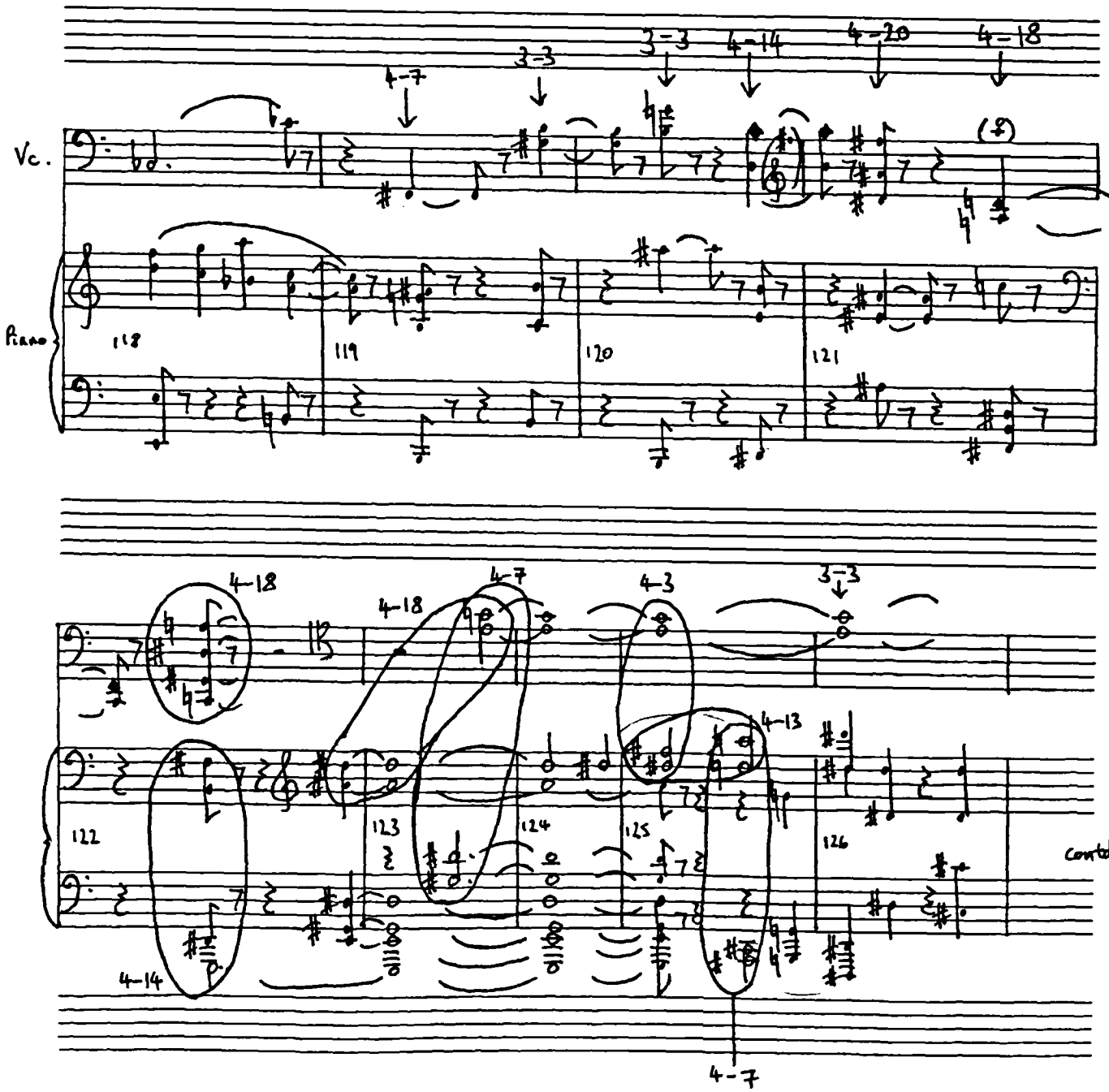
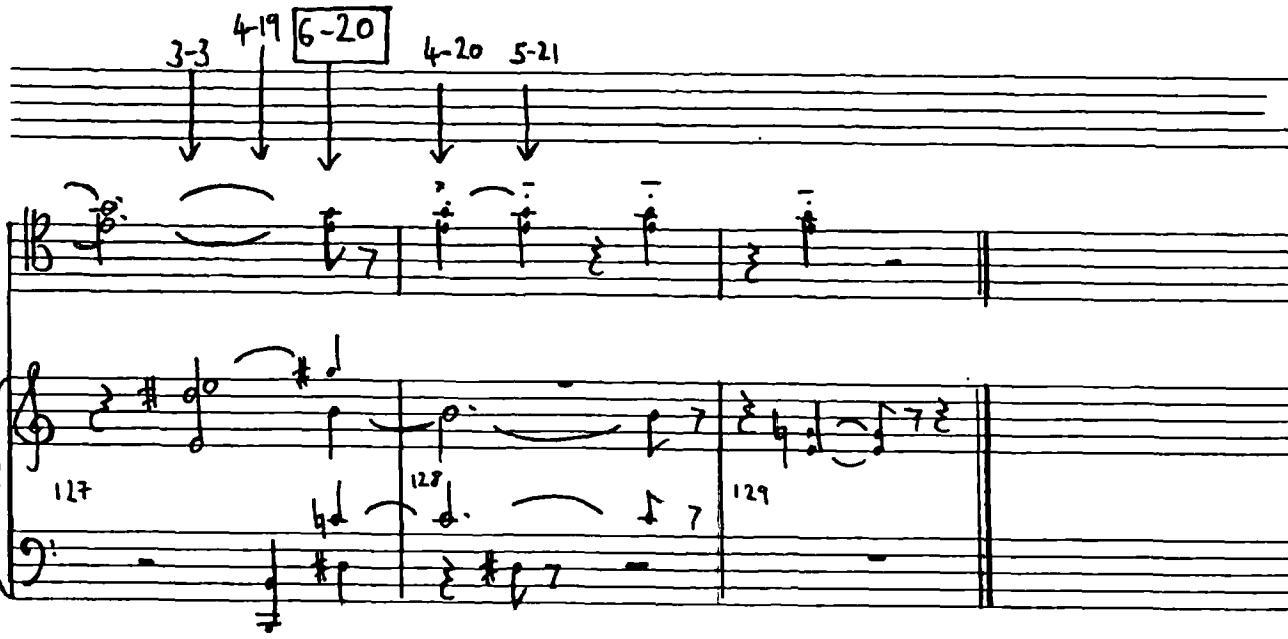
Ex. 5.13 "Chart 9" from Schiff The Music of Elliott Carter

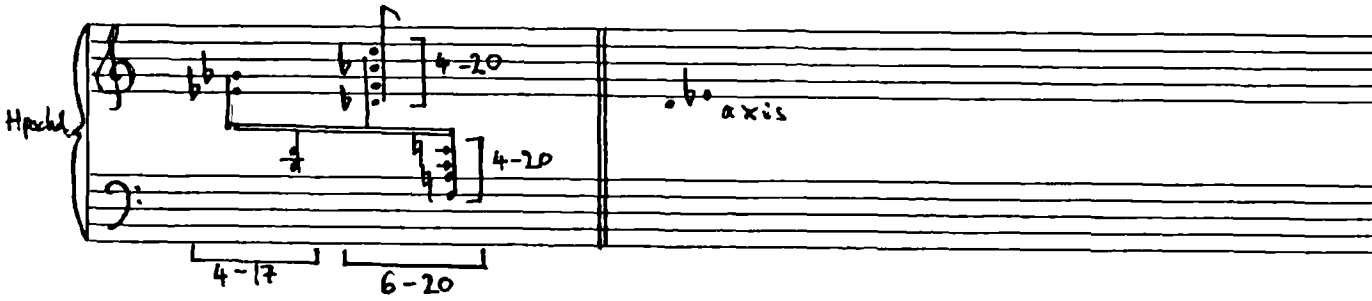


Ex. 5.14 Cello Sonata, I, 118-129

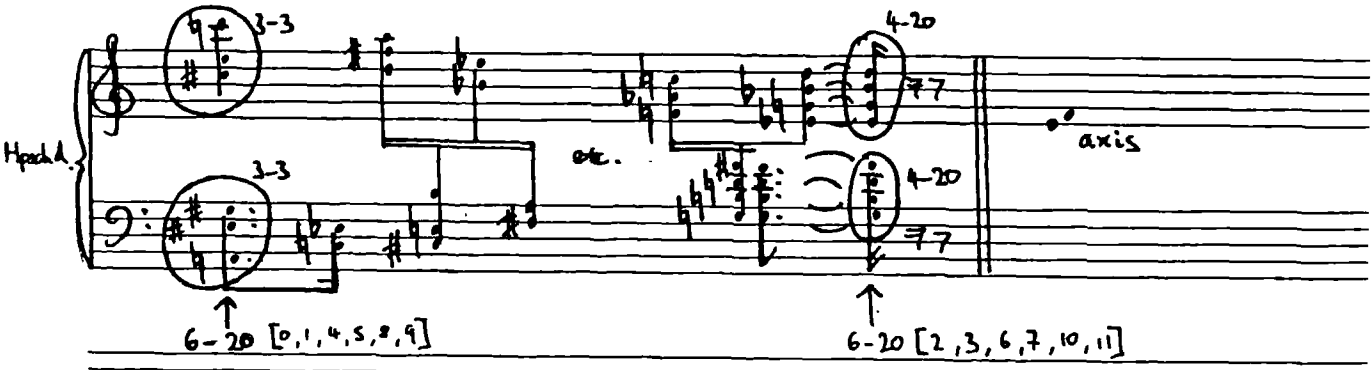




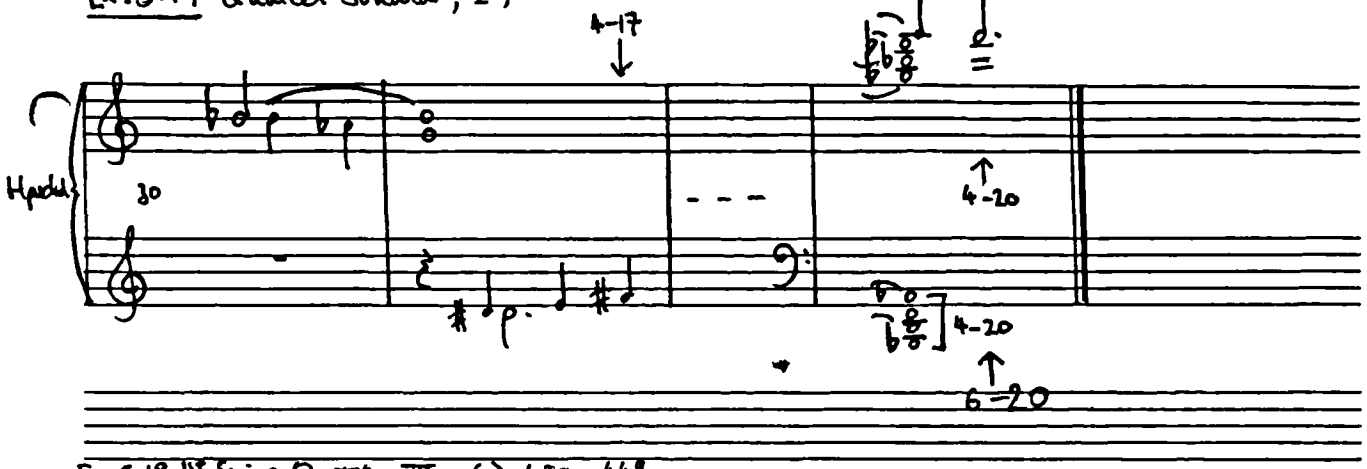
Ex. 5.15 Quartet Sonata, I, 1



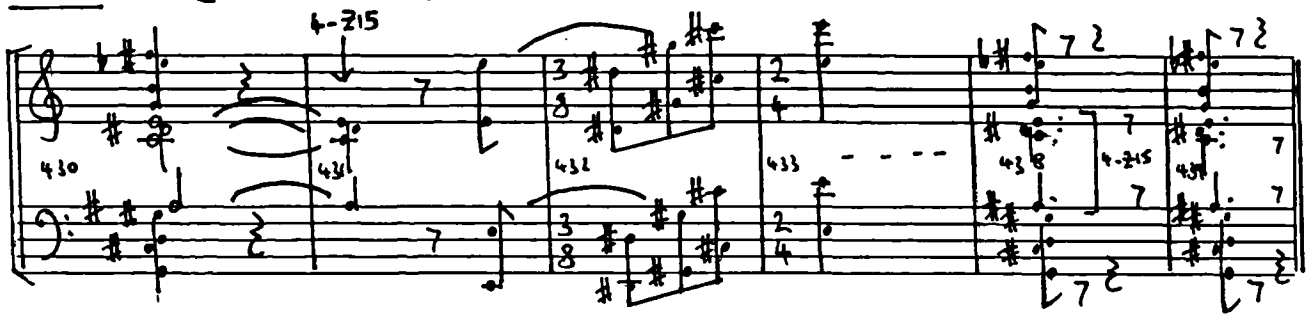
Ex. 5.16 Quartet Sonata, I, 23-24



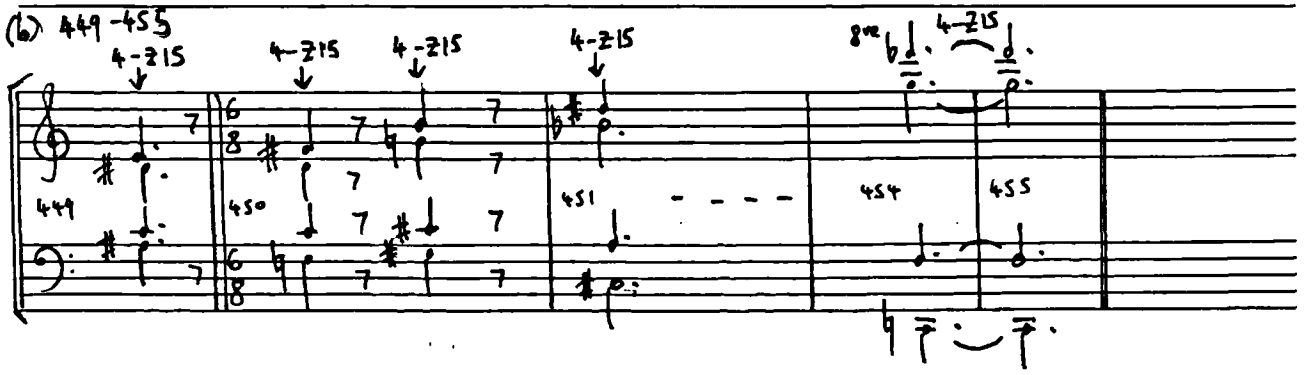
Ex. 5.17 Quartet Sonata, I, 30 – 68



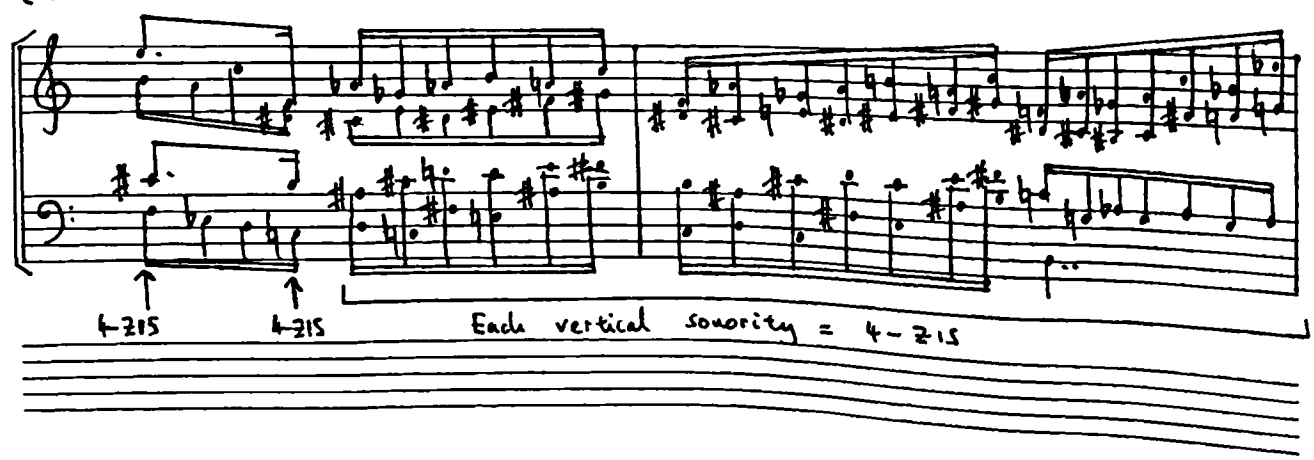
Ex. 5.18 1st String Quartet, III (a) 430 – 449



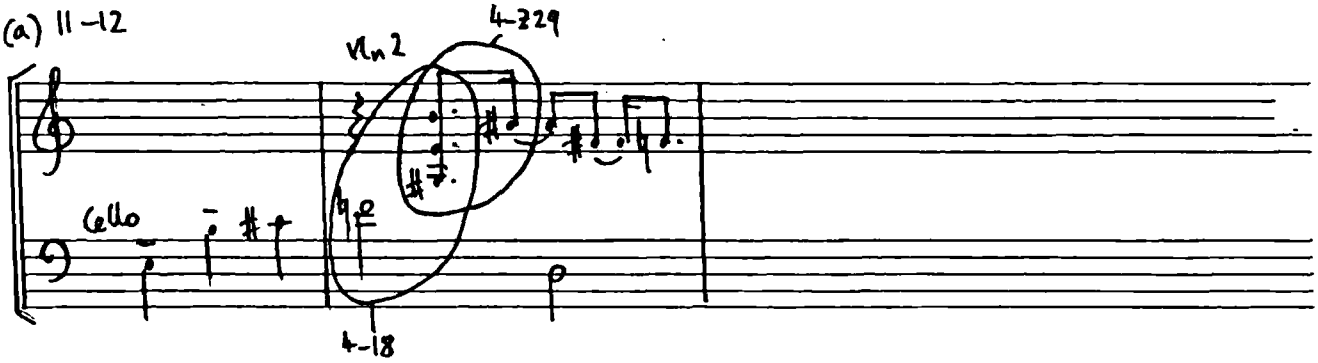
(b) 449 – 455



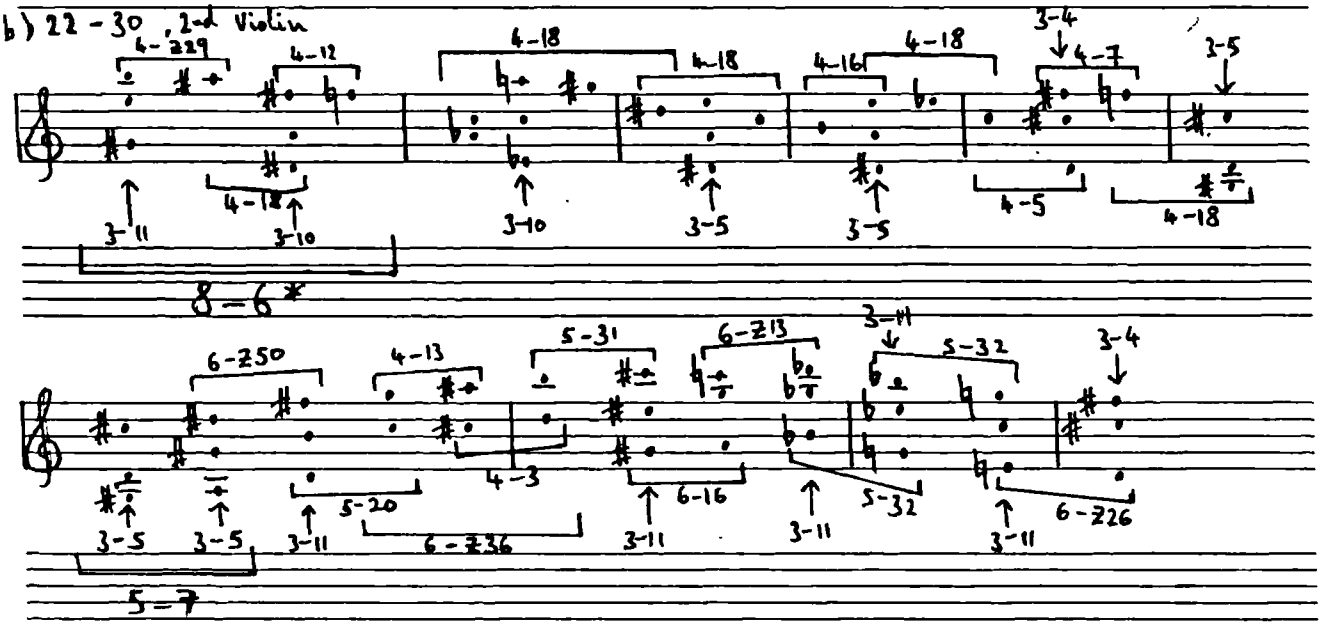
(c) 476 – 7



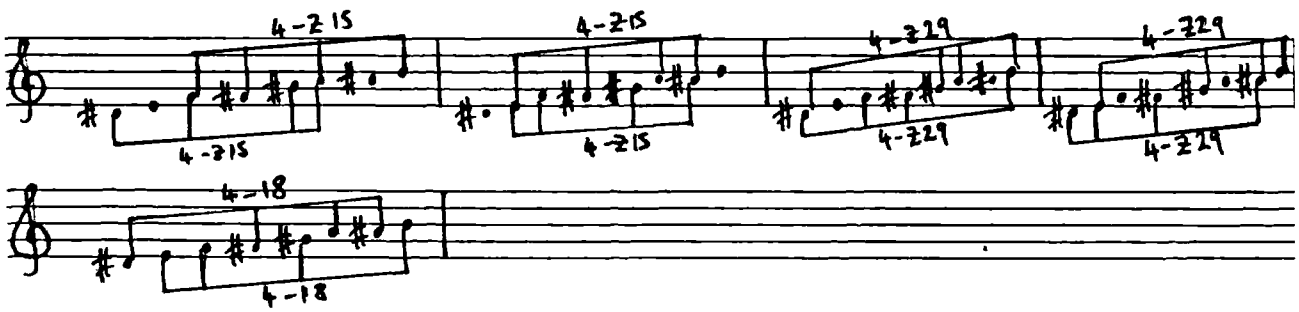
(a) 11–12



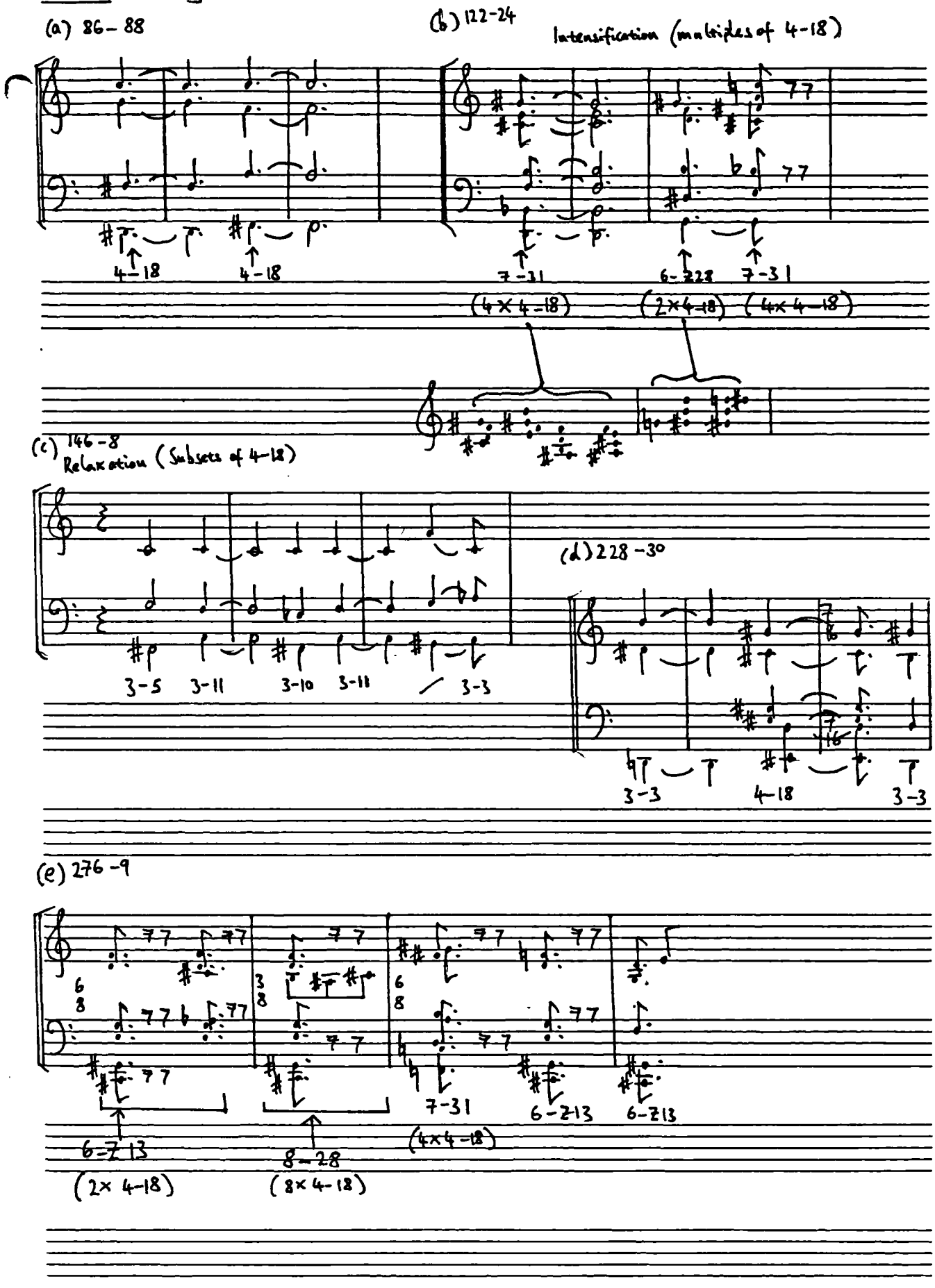
(b) 22 – 30 , 2nd Violin

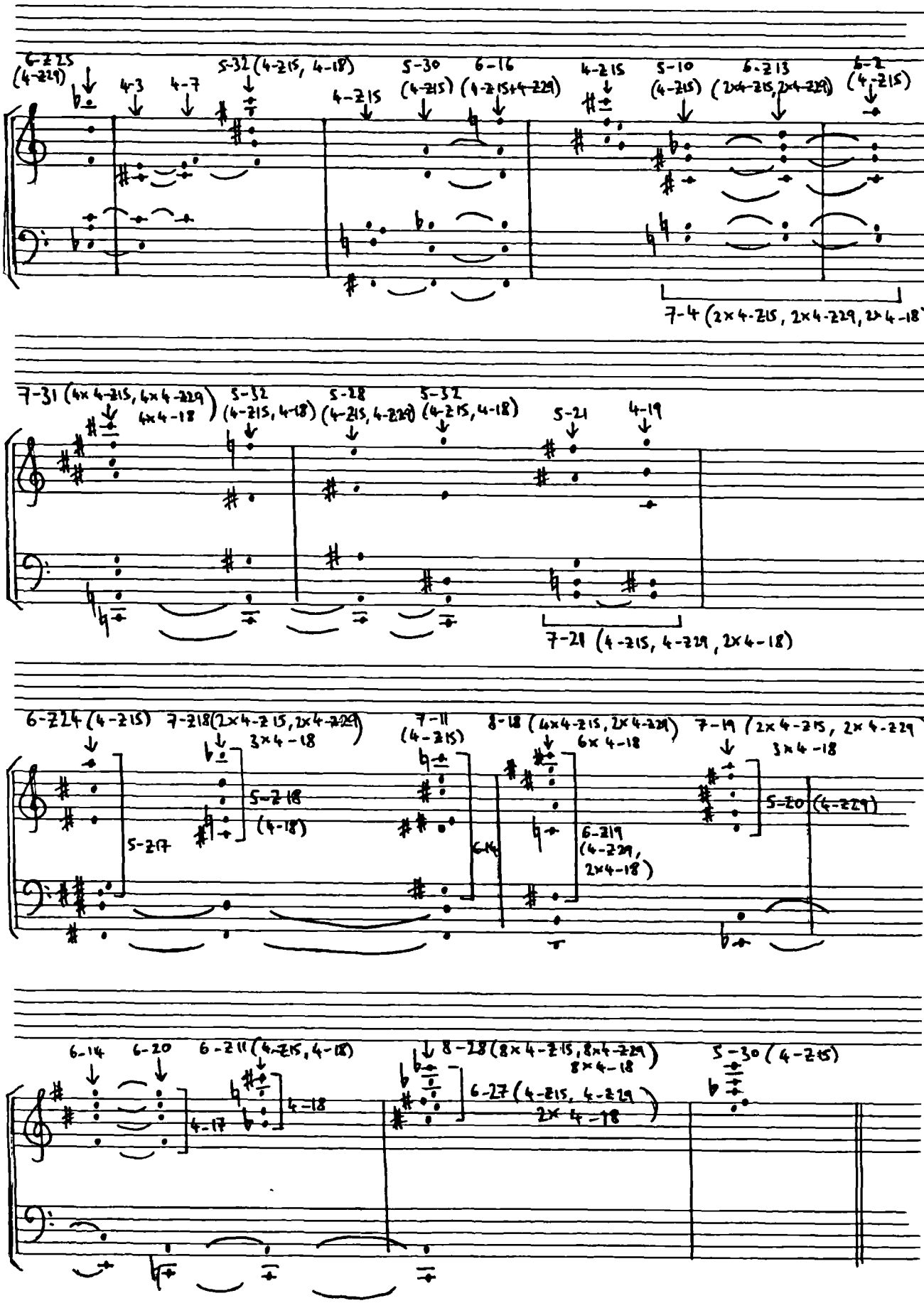


* 8-6 [0,1,2,3,5,6,7,8] : 4 x 4-Z15, 4 x 4-Z29 , 2 x 4-18



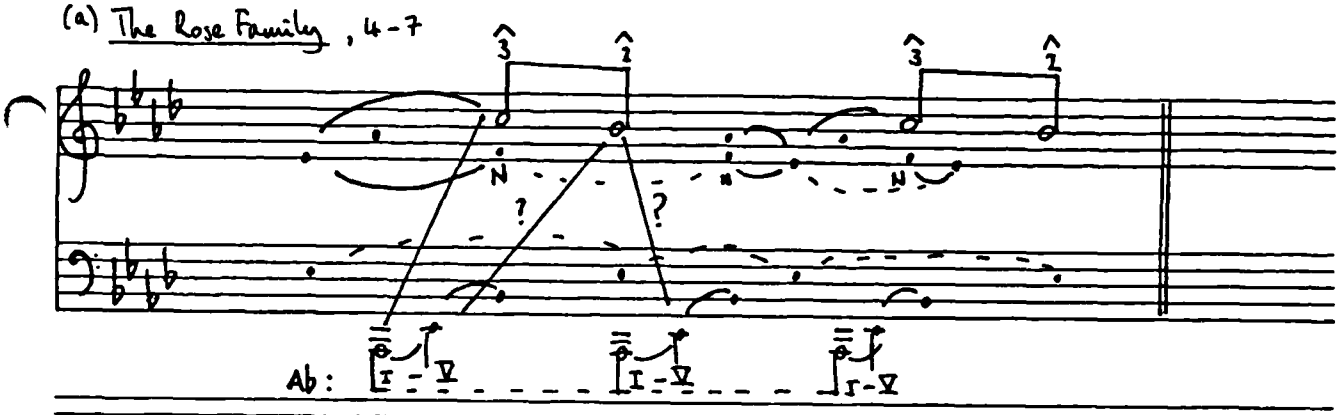
Ex. 5.20 1st String Quartet, III



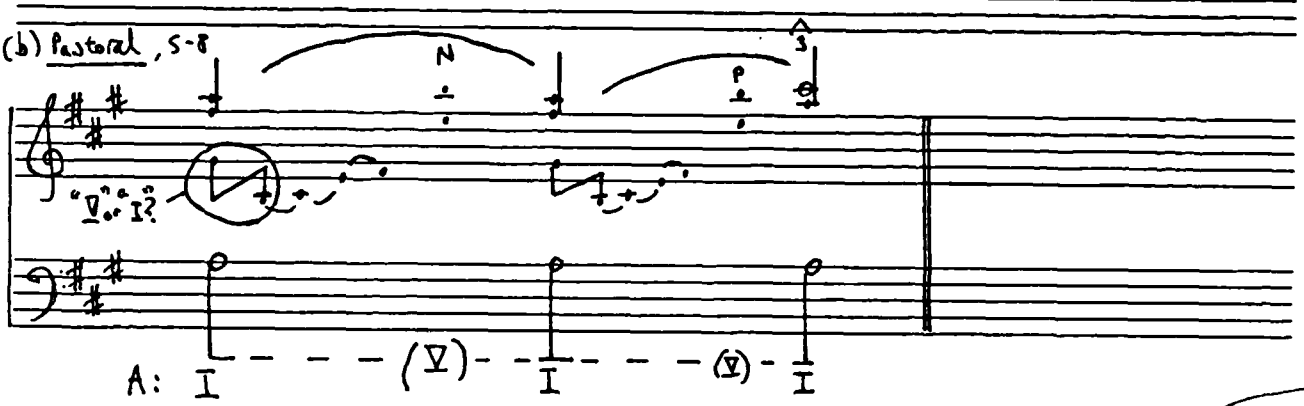

6-Z25 (4-Z29)
4-3
4-7
5-32 (4-Z15, 4-18)
4-Z15
5-30 (4-Z15)
6-16 (4-Z15+4-Z29)
4-Z15
5-10 (4-Z15)
6-Z13 (2×4-Z15, 2×4-Z29)
6-Z (4-Z15)
7-4 (2×4-Z15, 2×4-Z29, 2×4-18)
7-31 (4×4-Z15, 4×4-Z29, 4×4-18)
5-32 (4-Z15, 4-18)
5-28 (4-Z15, 4-Z29)
5-32 (4-Z15, 4-18)
5-21
4-19
7-21 (4-Z15, 4-Z29, 2×4-18)
6-Z24 (4-Z15)
7-Z18 (2×4-Z15, 2×4-Z29, 3×4-18)
7-11 (4-Z15)
8-18 (4×4-Z15, 2×4-Z29, 6×4-18)
7-19 (2×4-Z15, 2×4-Z29, 3×4-18)
5-Z17
5-Z18 (4-18)
6-Z19 (4-Z29, 2×4-18)
5-20 (4-Z29)
6-14
6-20
6-Z11 (4-Z15, 4-18)
4-17
4-18
8-28 (8×4-Z15, 8×4-Z29, 8×4-18)
6-27 (4-Z15, 4-Z29, 2×4-18)
5-30 (4-Z15)

Ex. 6.1

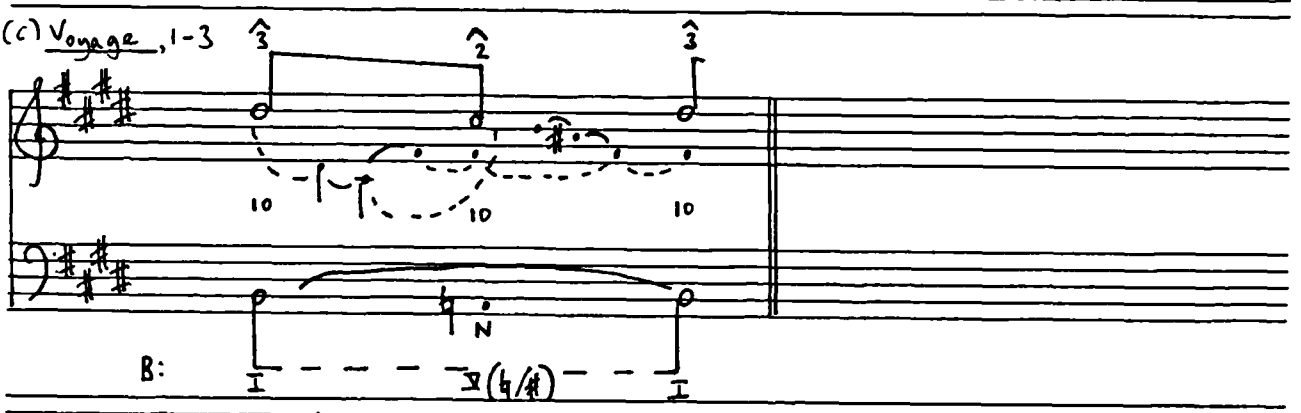
(a) The Rose Family, 4-7



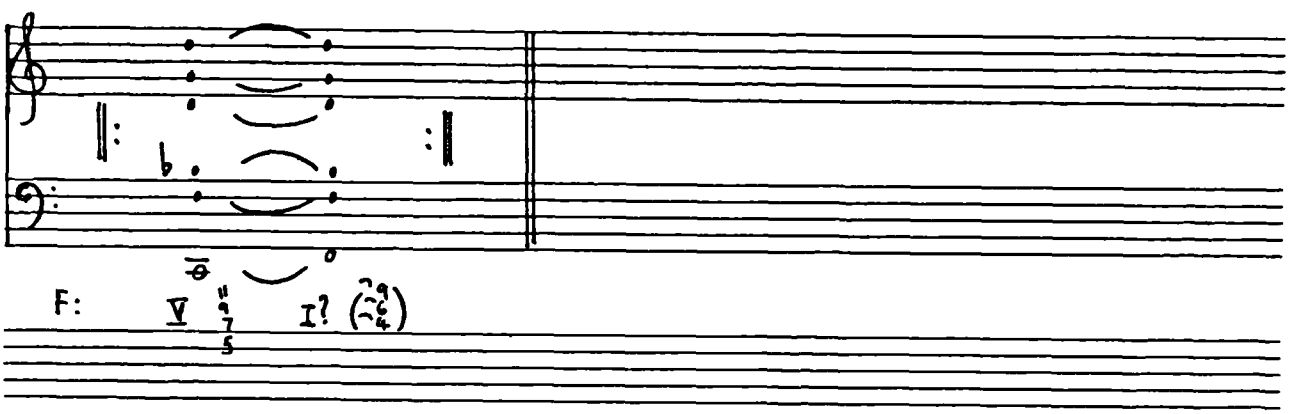
(b) Pastoral, 5-8



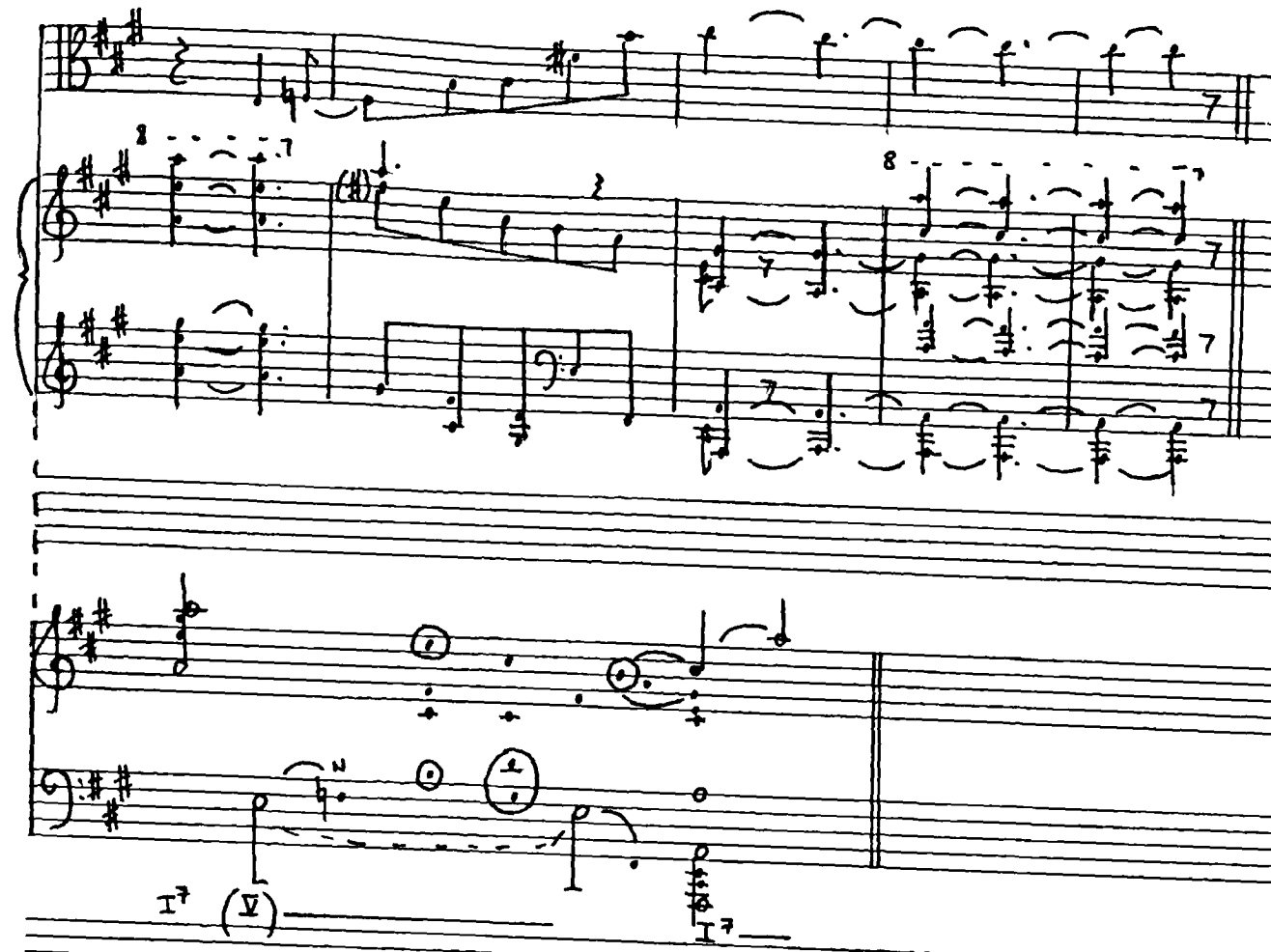
(c) Voyage, 1-3



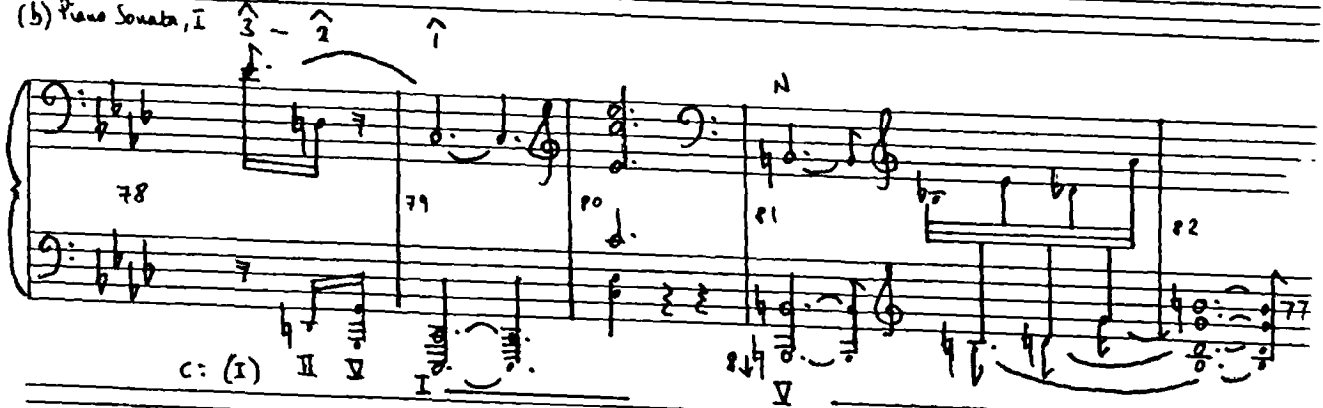
(d) Dust of Snow, 23-4

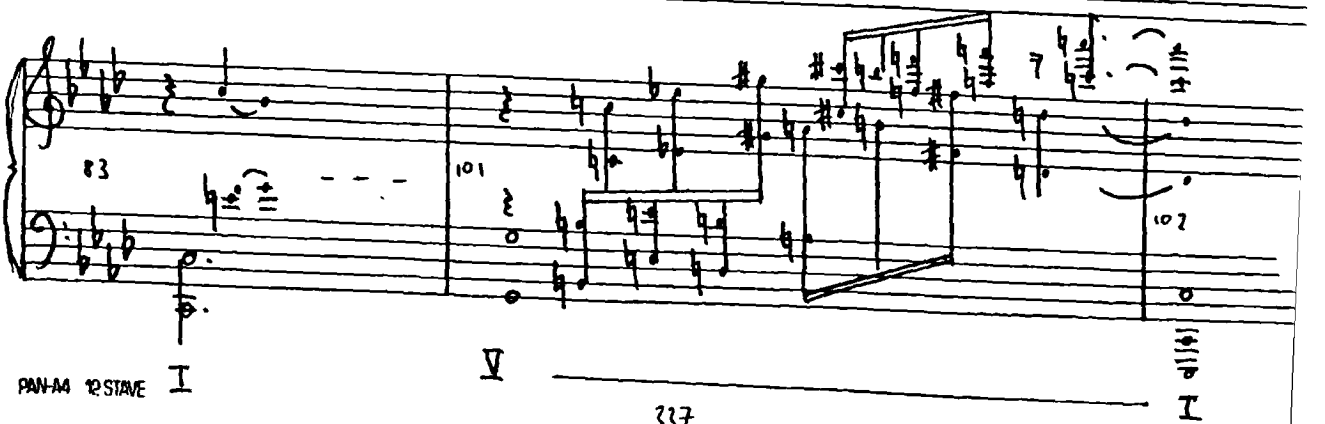


(a) Pastoral, 275-9



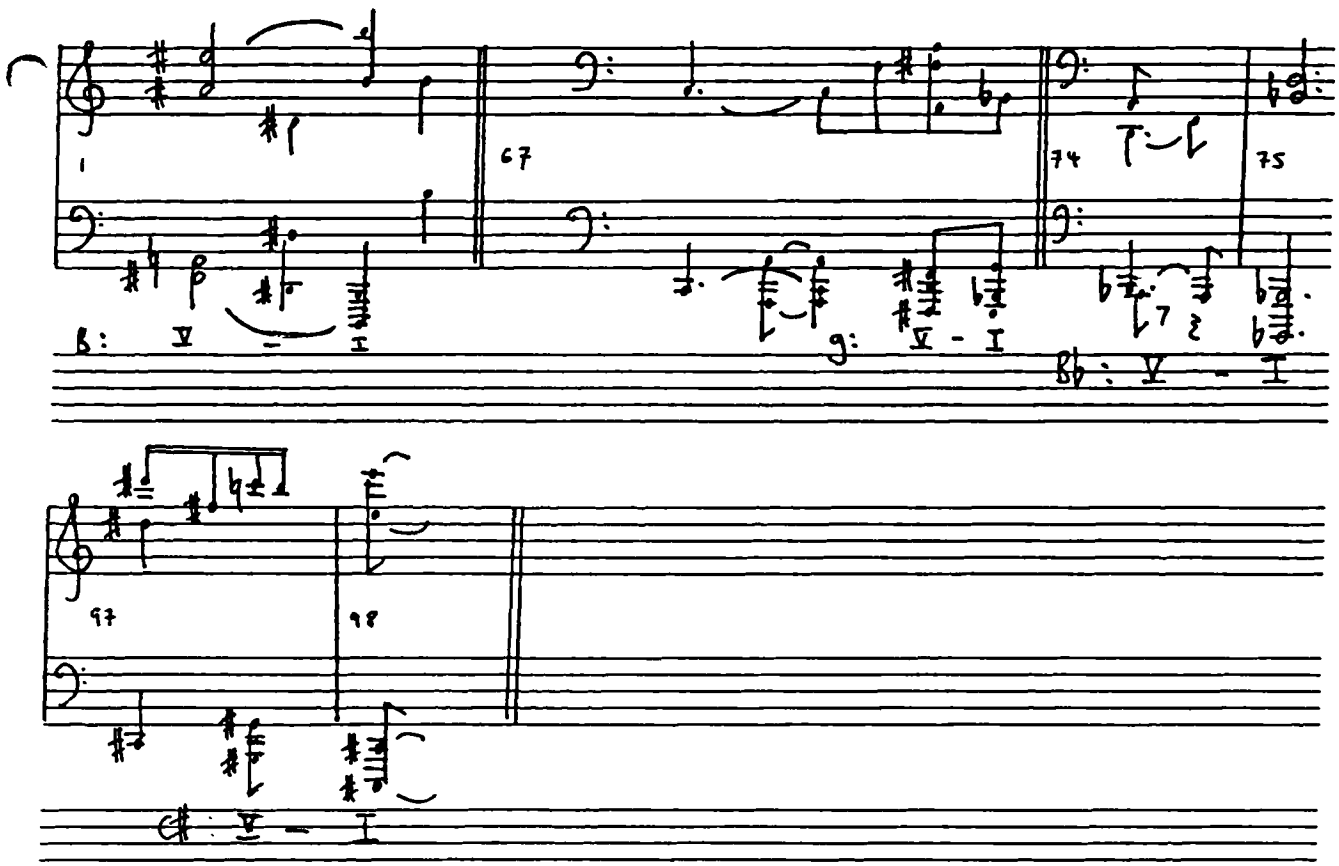
(b) Piano Sonata, I



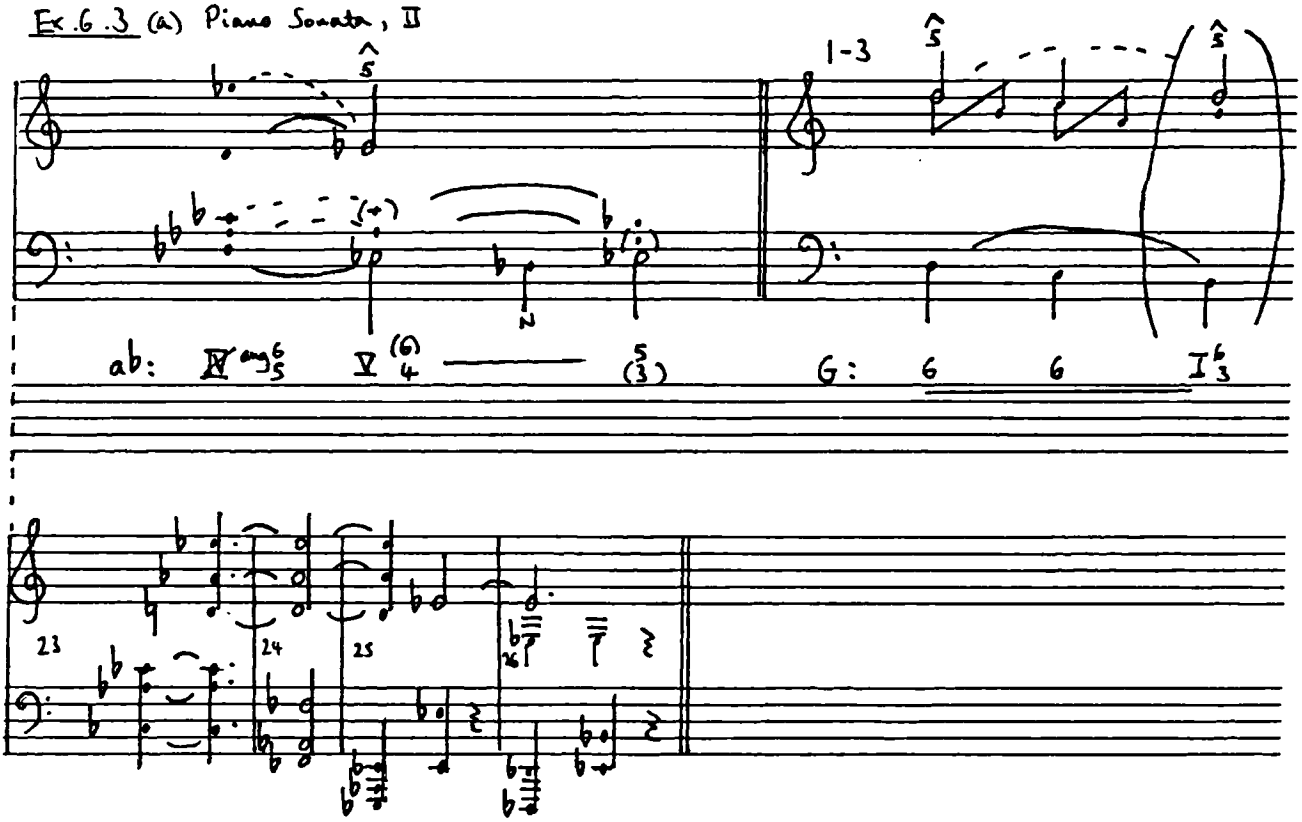


PAN-A4 12 STAVE

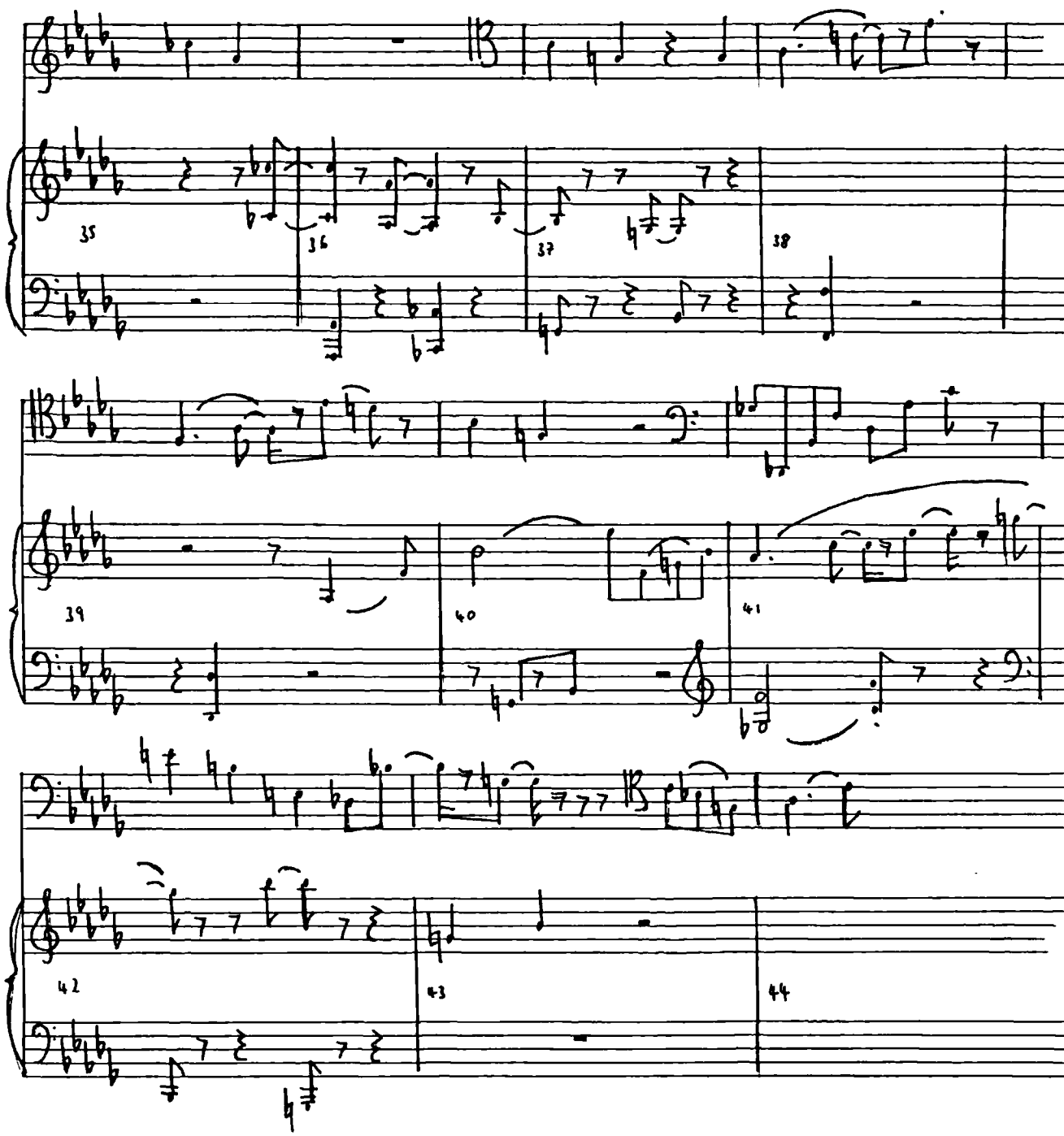
(c) Cello Sonata, I

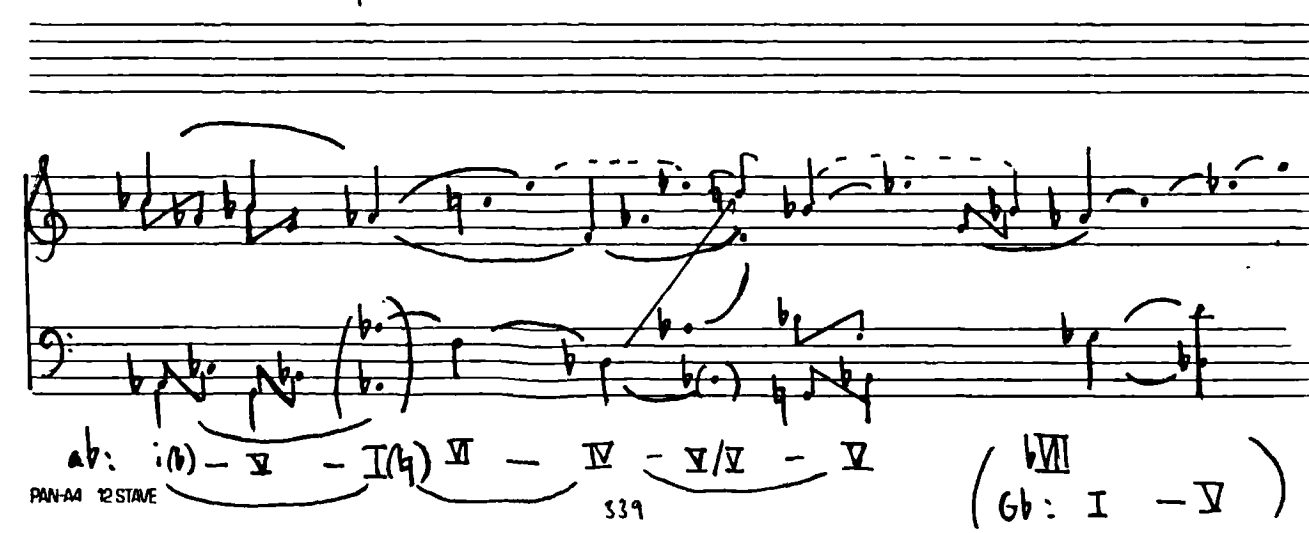


Ex. 6.3 (a) Piano Sonata, II



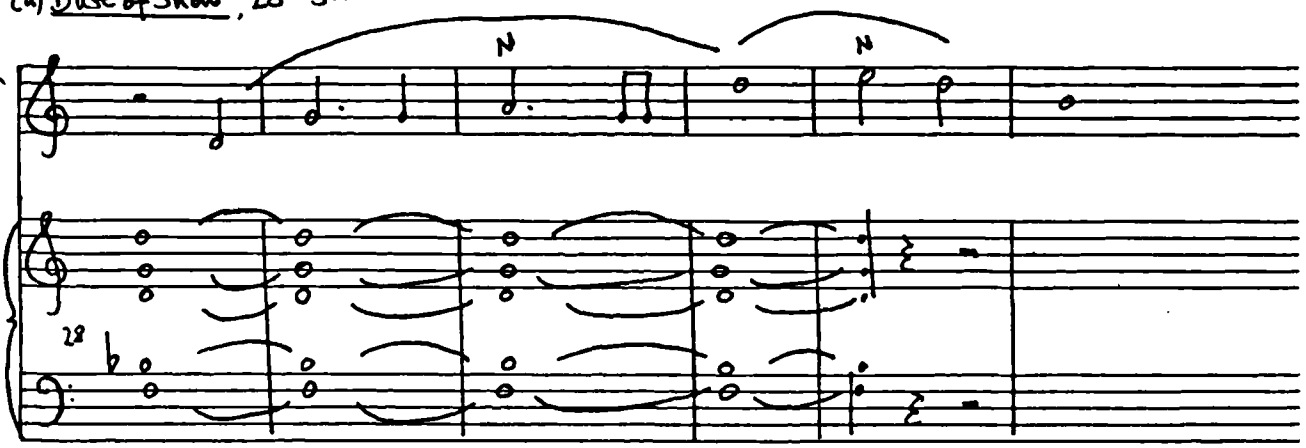
(b) Cello Sonata, II, 35-44



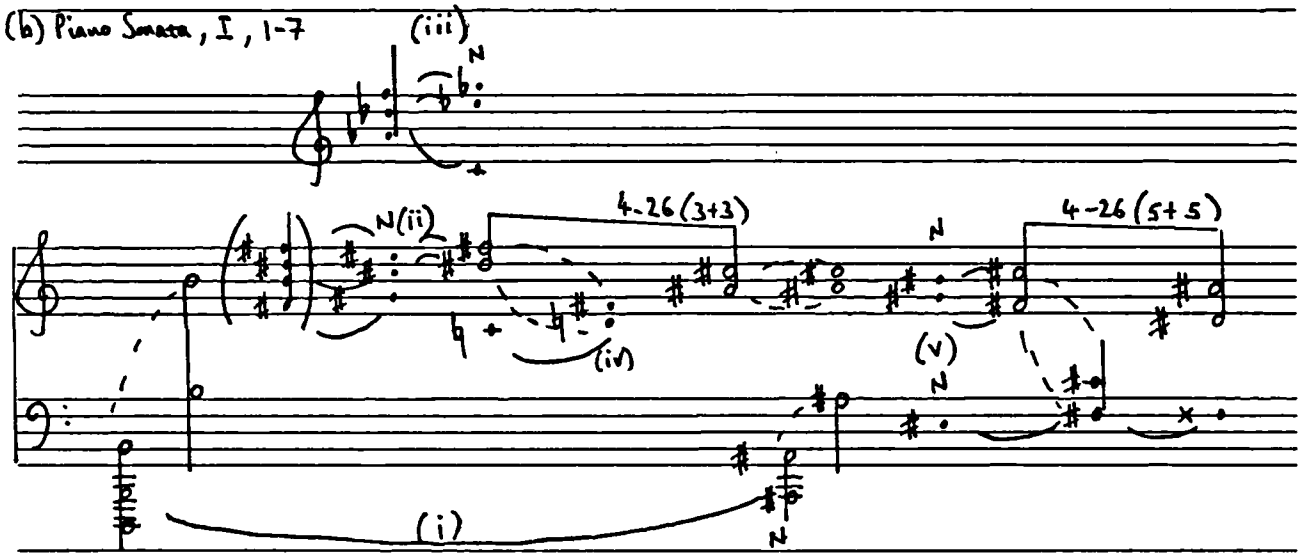


Ex. 6.4

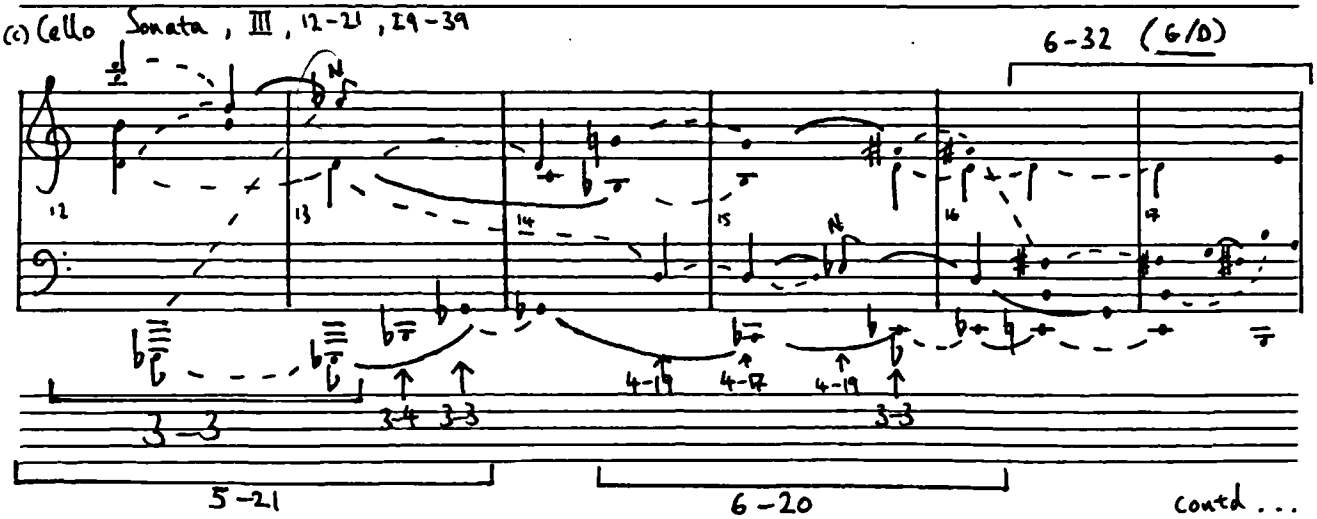
(a) Dust of Snow, 28-32

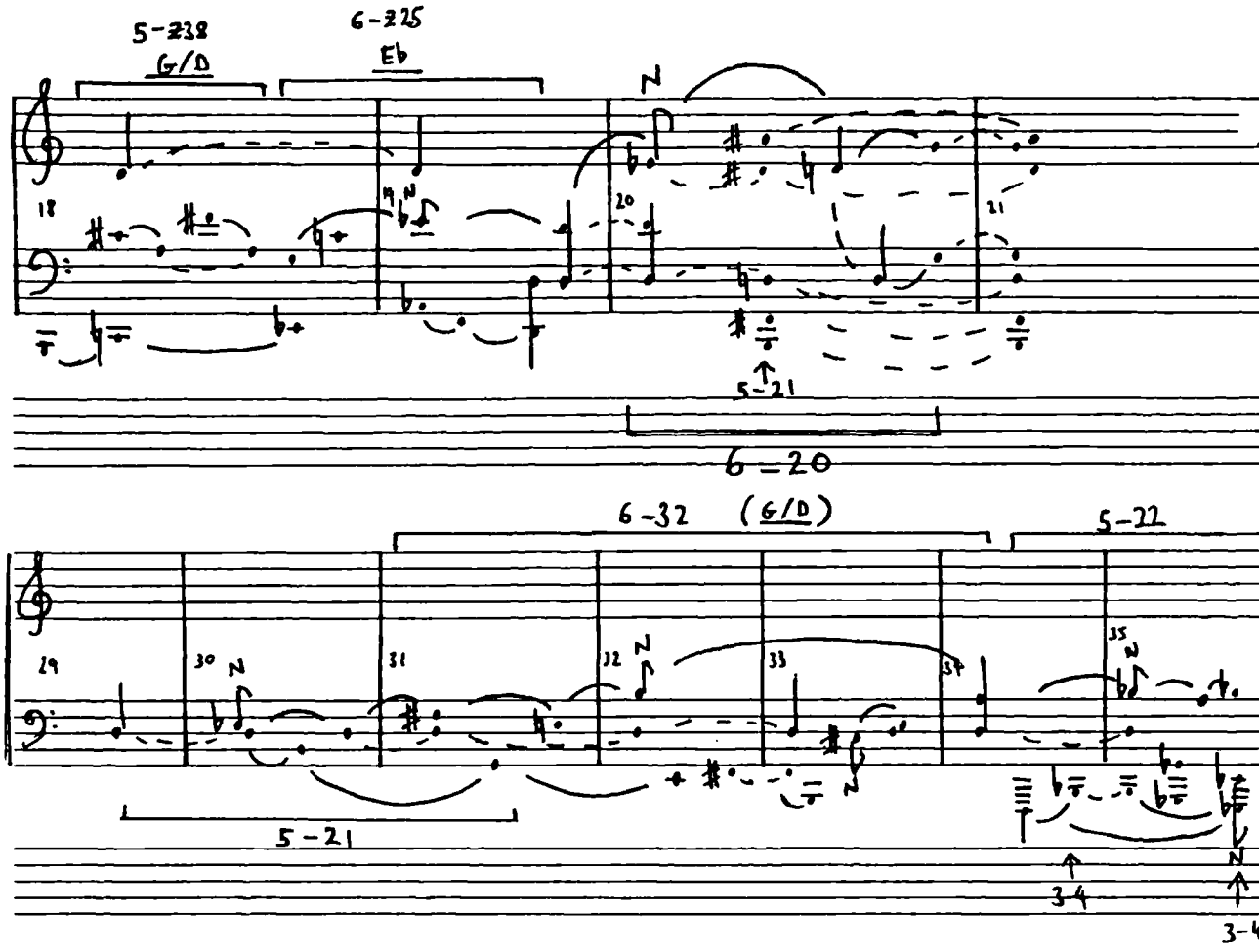


(b) Piano Sonata, I, 1-7



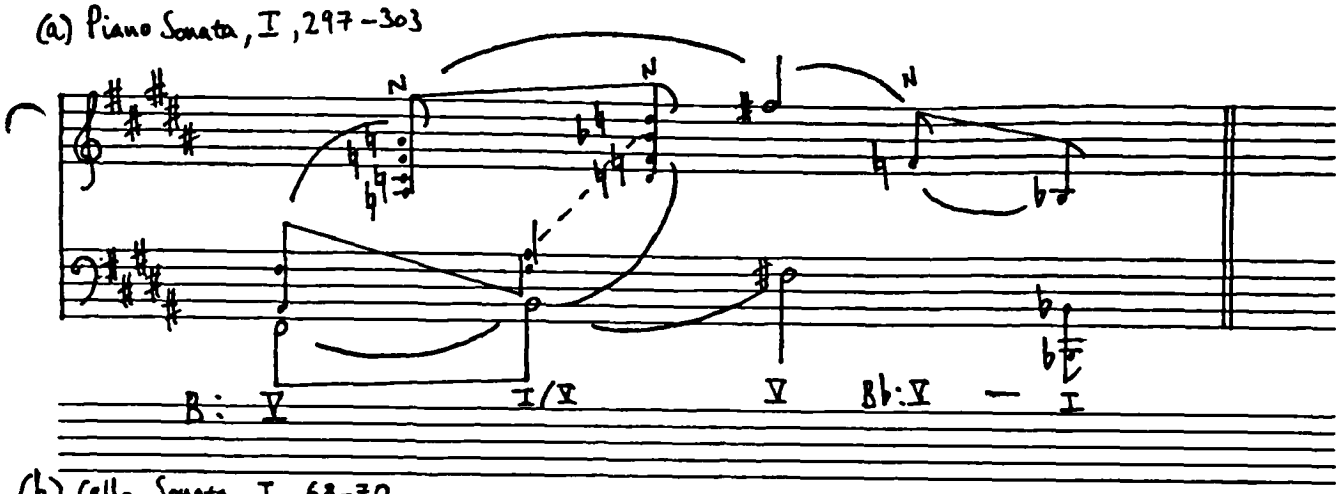
(c) Cello Sonata, III, 12-21, 29-39



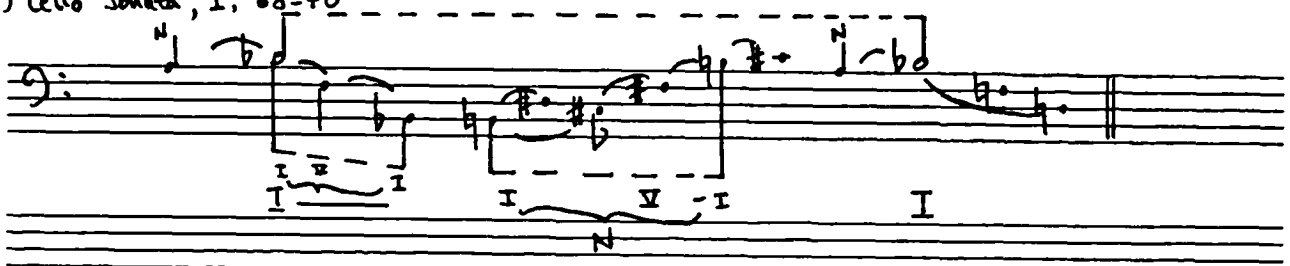

5-238
G/D
6-225
Eb
N
18
19
20
21
5-21
6-20
6-32
(G/D)
5-22
29
30
31
32
33
34
35
5-21
3-4
36
37
38
39

Ex. 6.5

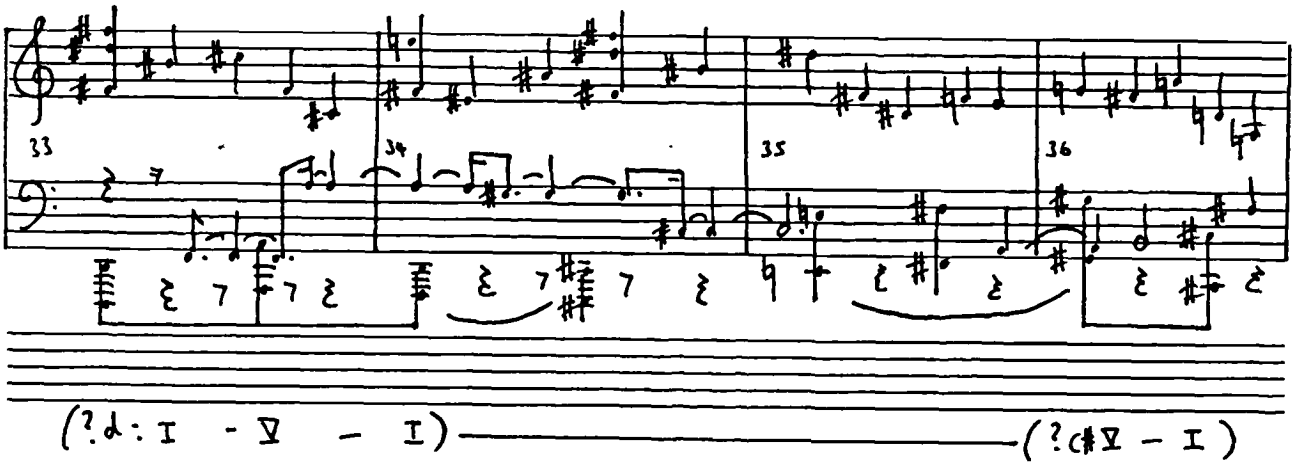
(a) Piano Sonata, I, 297–303



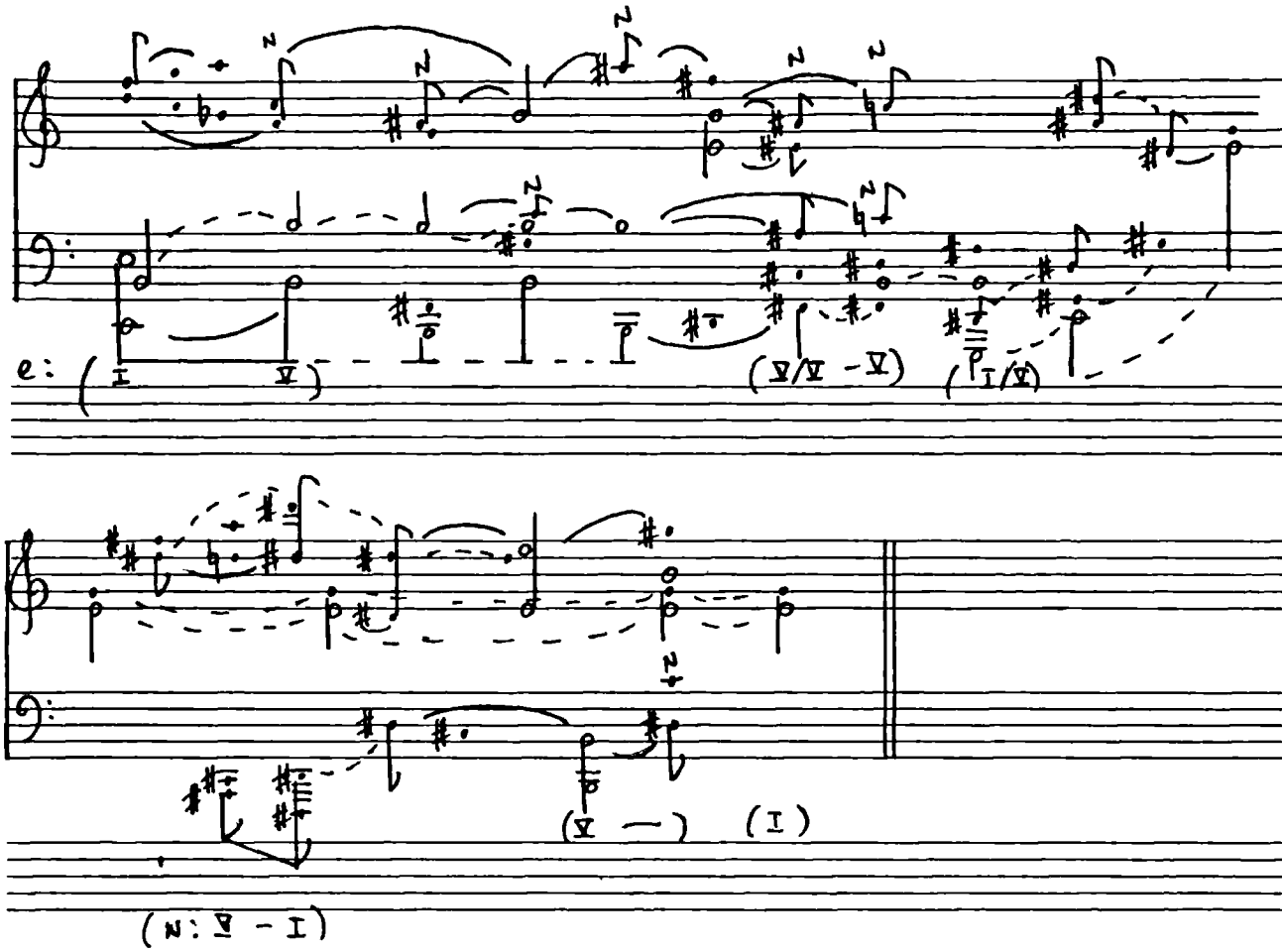
(b) Cello Sonata, I, 68–70



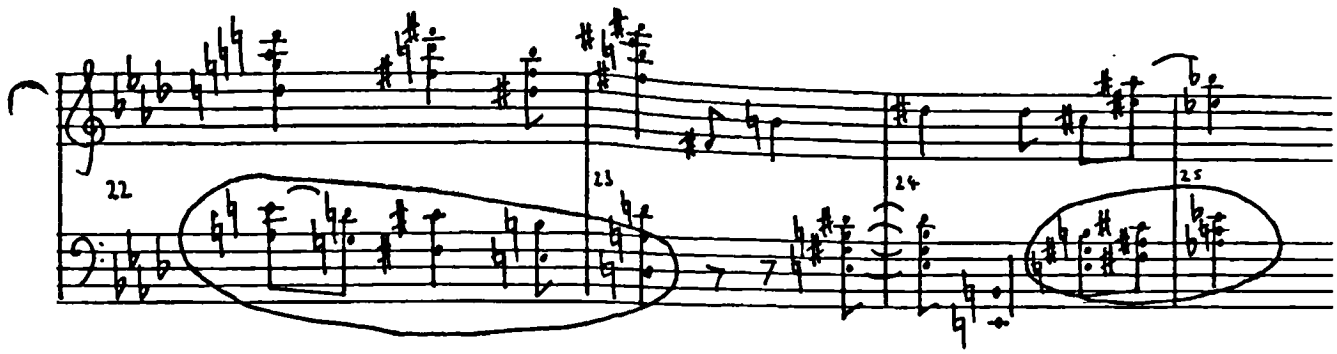
(c) Cello Sonata, I, 33–36



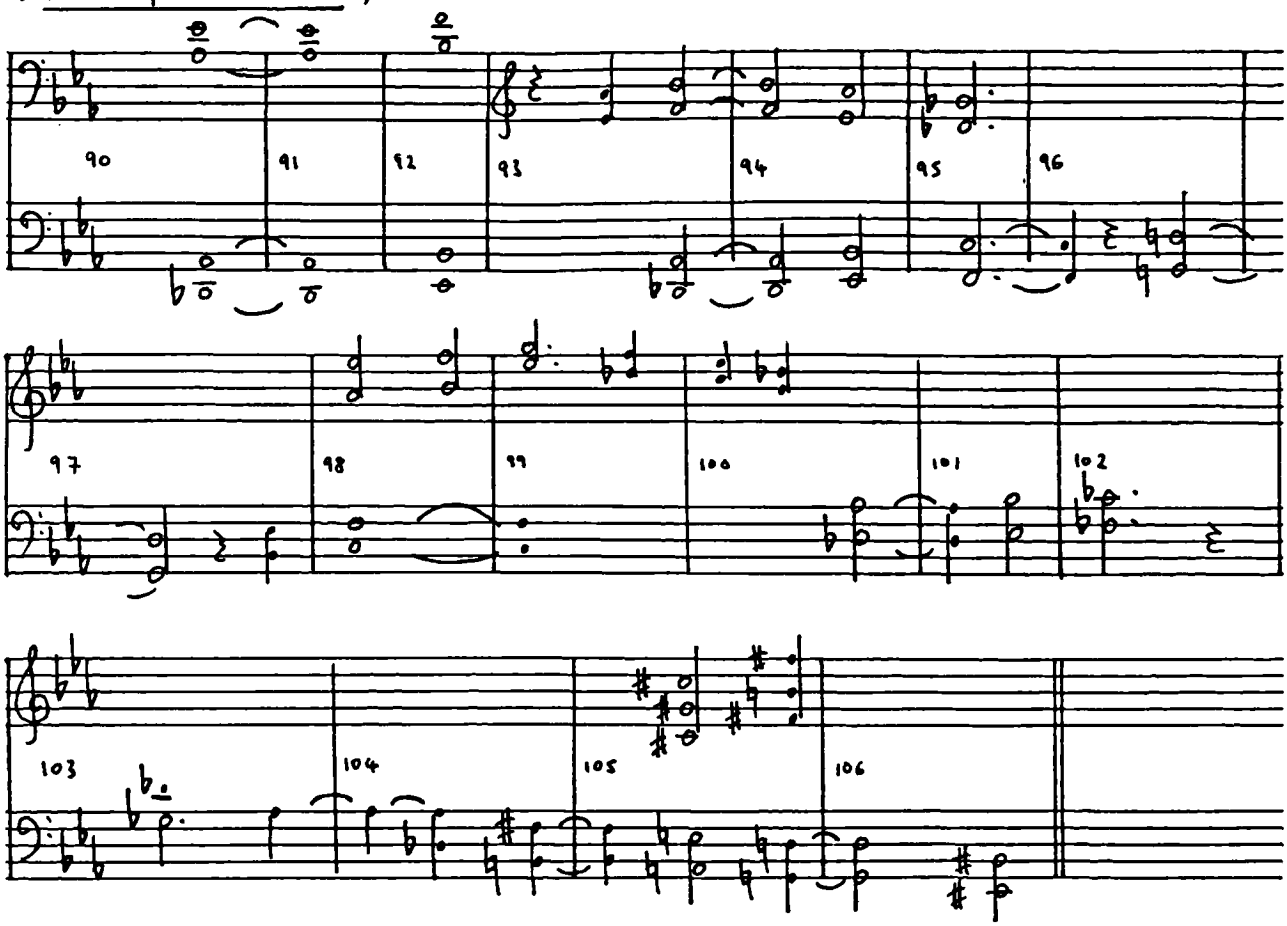
(d) Cello Sonata, I, 118 - 129



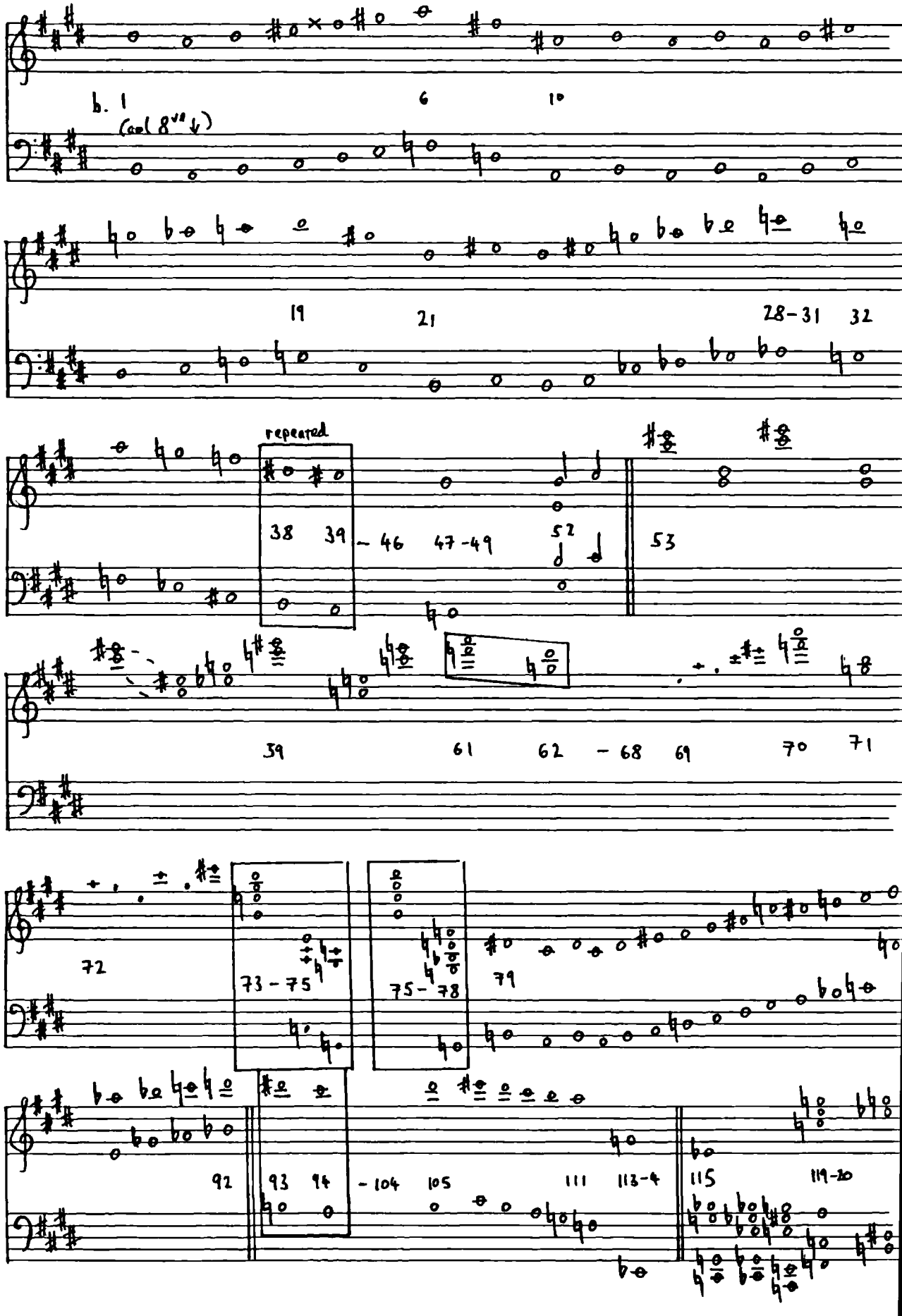
Ex. 6.6 (a) The Rose Family, 22 – 25



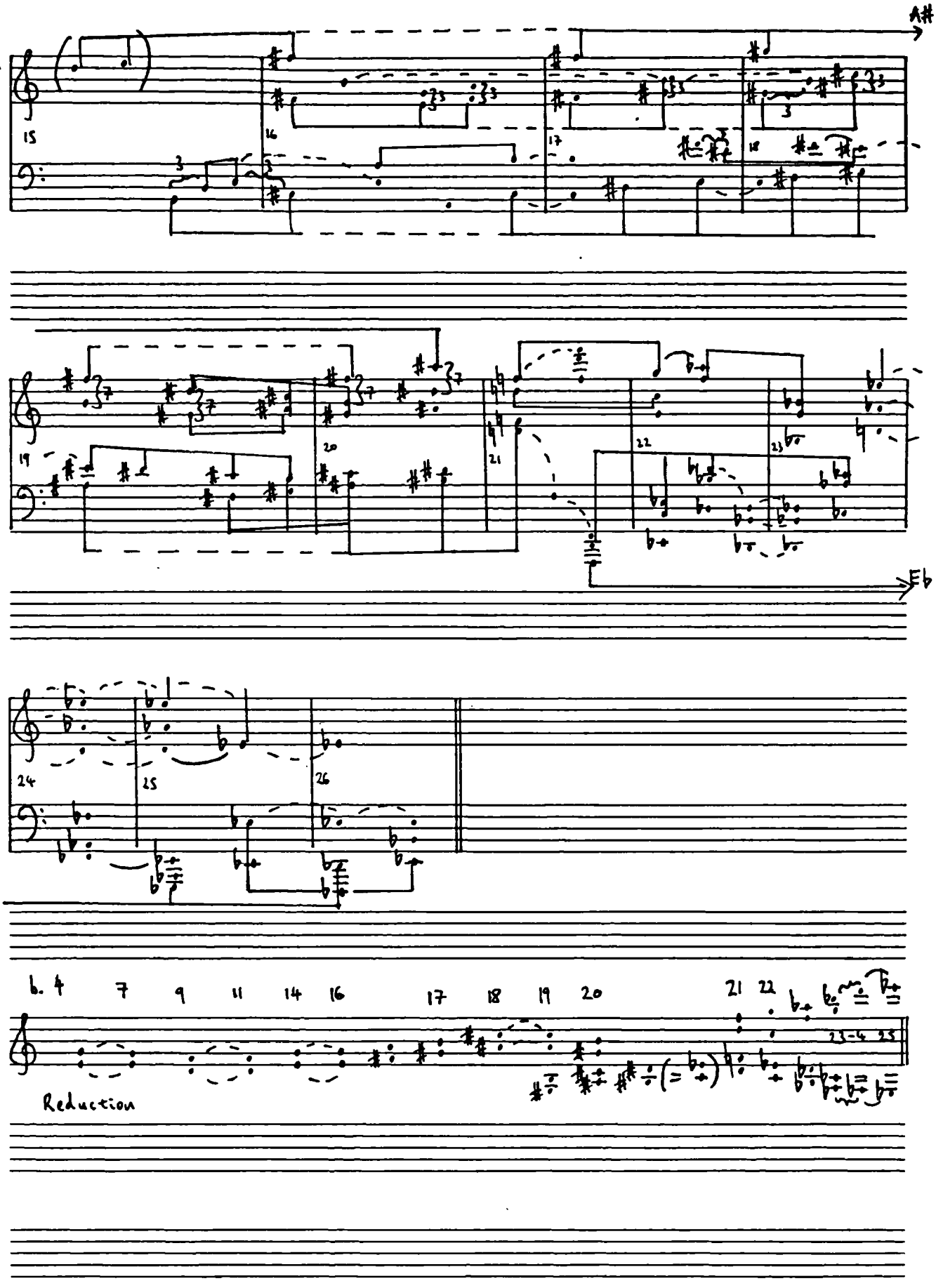
(b) Warble for lilac-time, 90 – 106 (reduction)

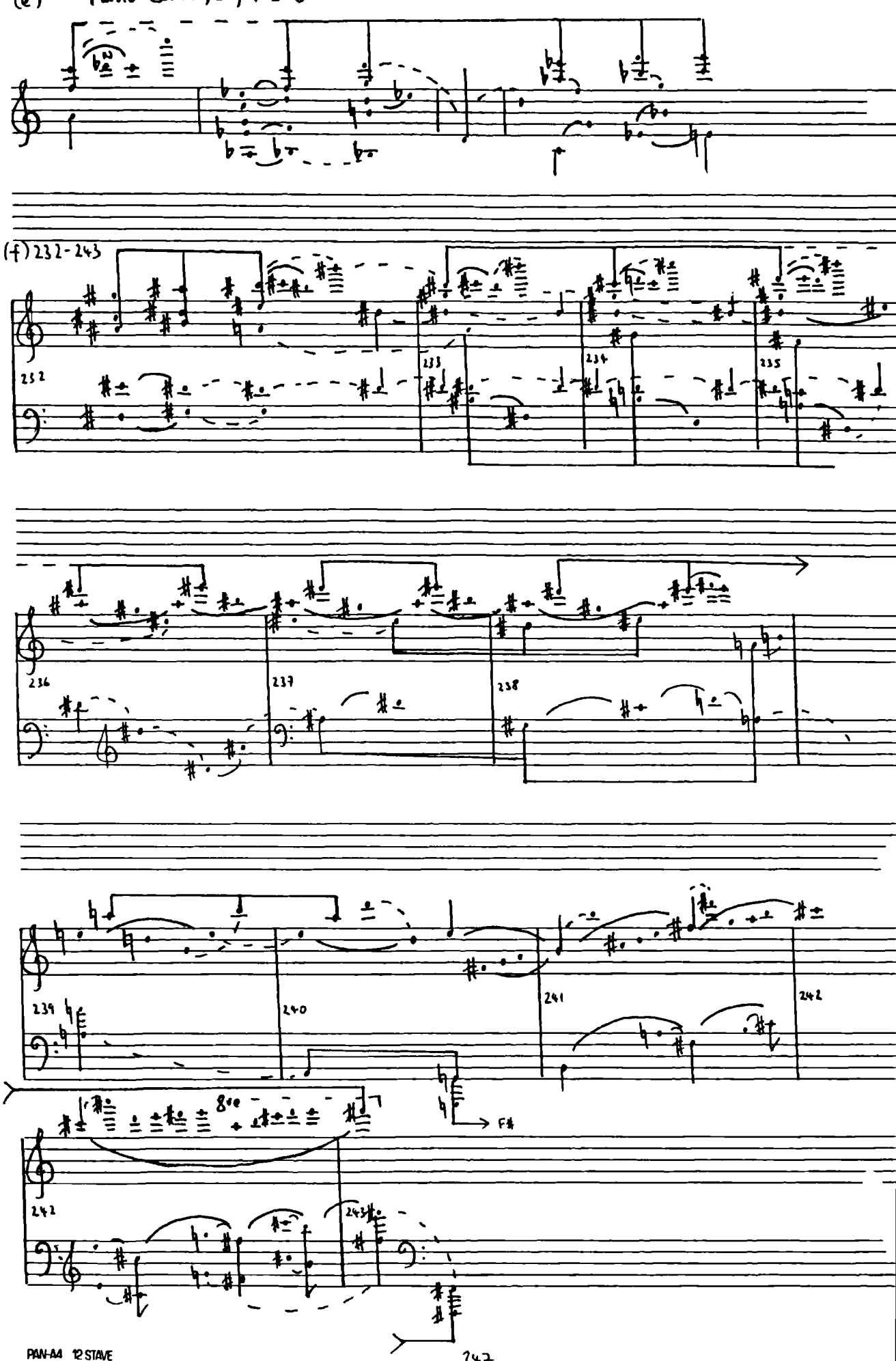


(c) Voyage


b. 1
(8va)
6
10
19
21
28-31
32
repeated
38
39
- 46
47-49
52
53
39
61
62
- 68
69
70
71
72
73 - 75
75 - 78
79
92
93
94
- 104
105
111
113-4
115
119-20

(d) Piano Sonata, II, 15-26

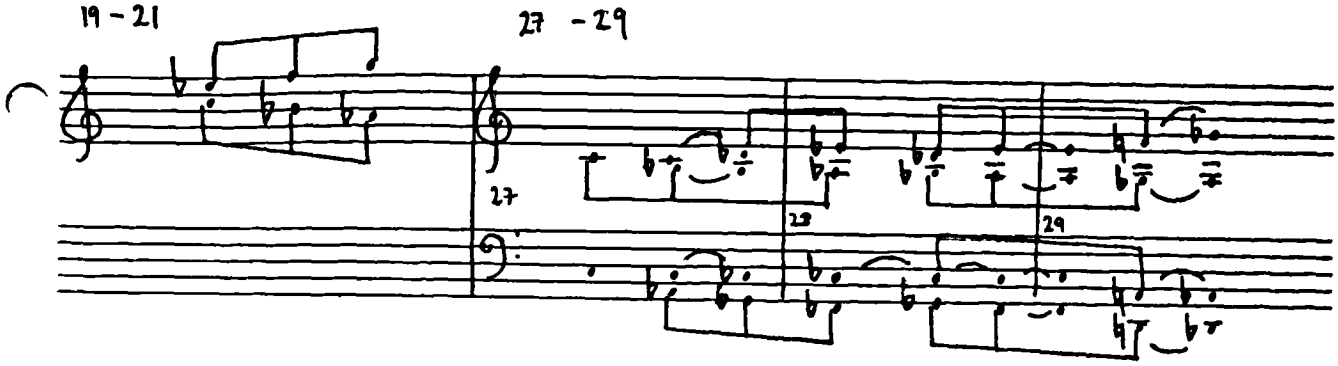



(f) 232-243
232
233
234
235
236
237
238
239
240
241
242
8va
F#
242
243

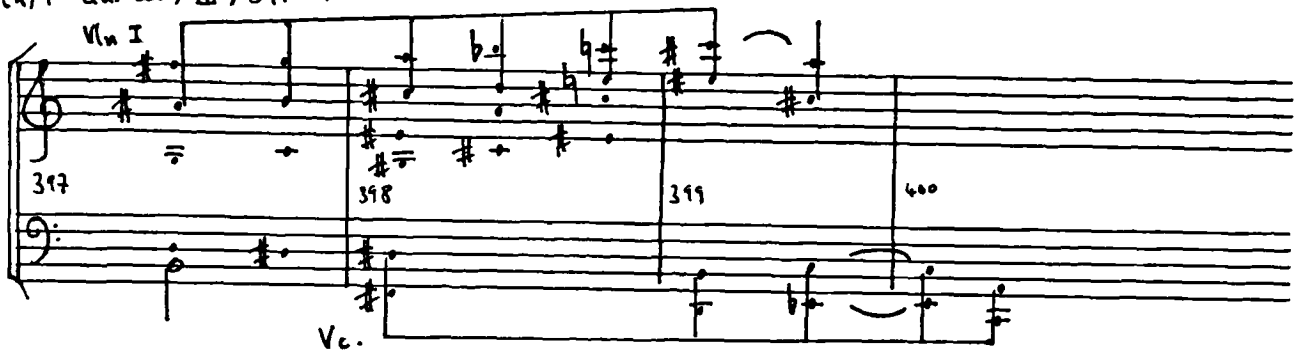
(g) Cello Sonata, I

19 - 21

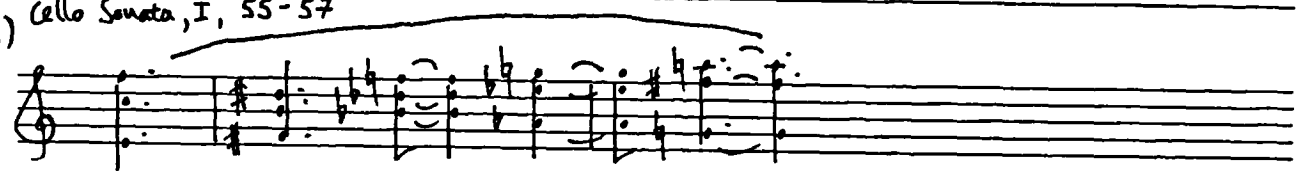
27 - 29



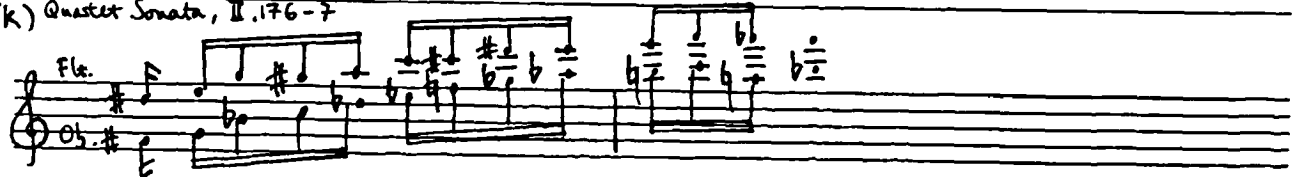
(h) 1st Quartet, III, 397 - 400



(i) Cello Sonata, I, 55 - 57

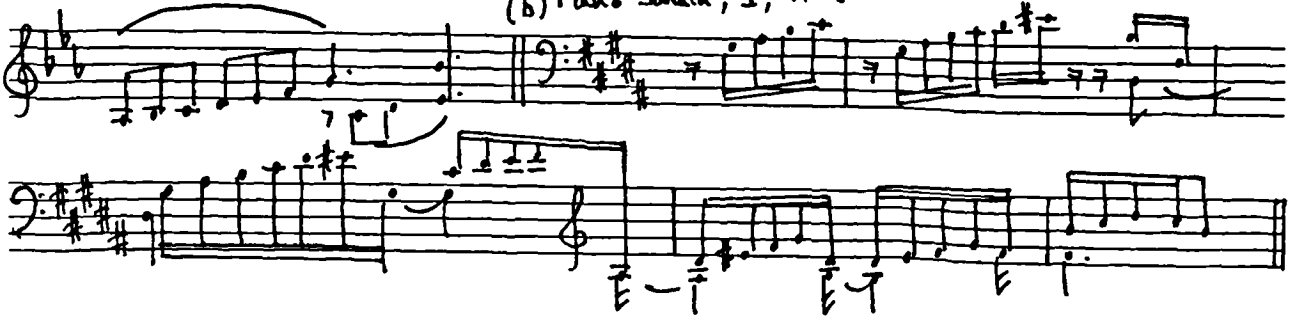


(K) Quartet Sonata, II. 176 - 7

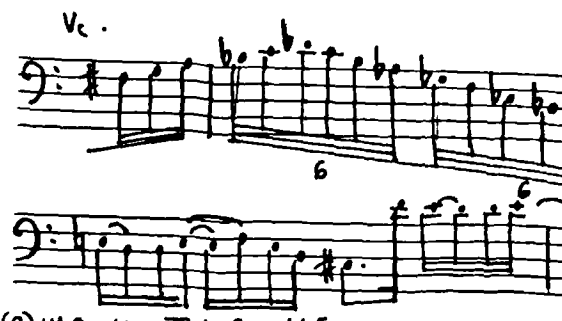


Ex. 6.7 (a) Warble for Lilac-time, 1 - 4

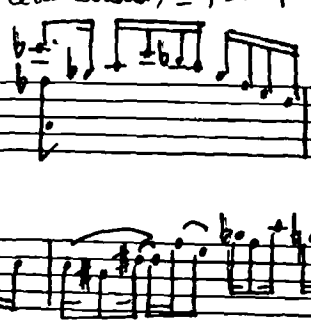
(b) Piano Sonata, I, 44 - 8



(c) Cello Sonata, III, 4-5

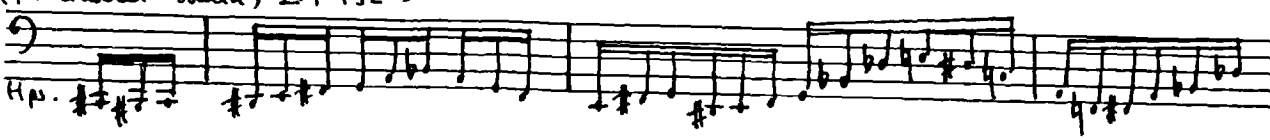


(d) Cello Sonata, IV, 26-9

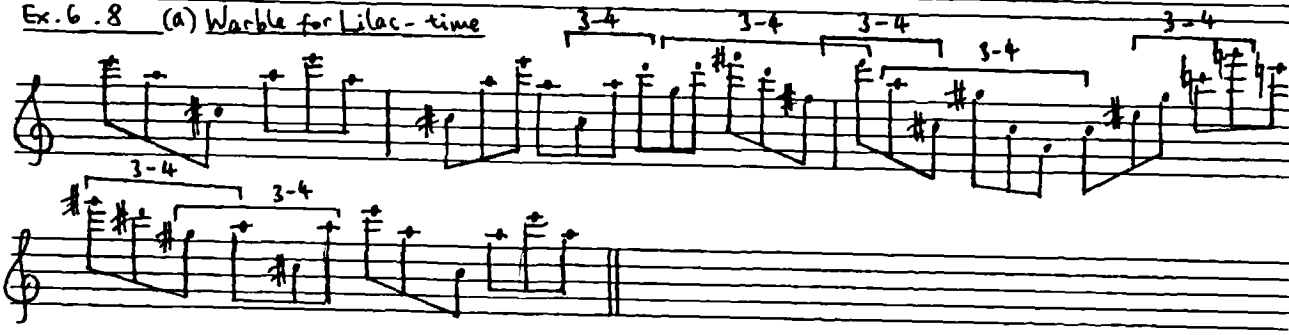


(e) 1st Quartet, III, 443 – 445

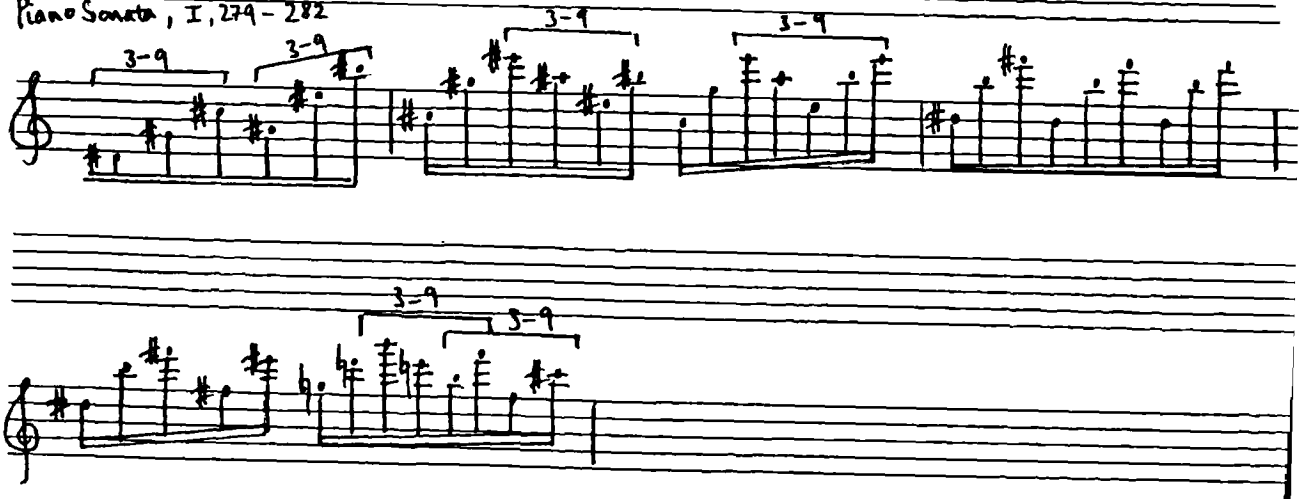
(f) Quartet Sonata, III, 432-5



Ex. 6.8 (a) Warble for Lilac-time

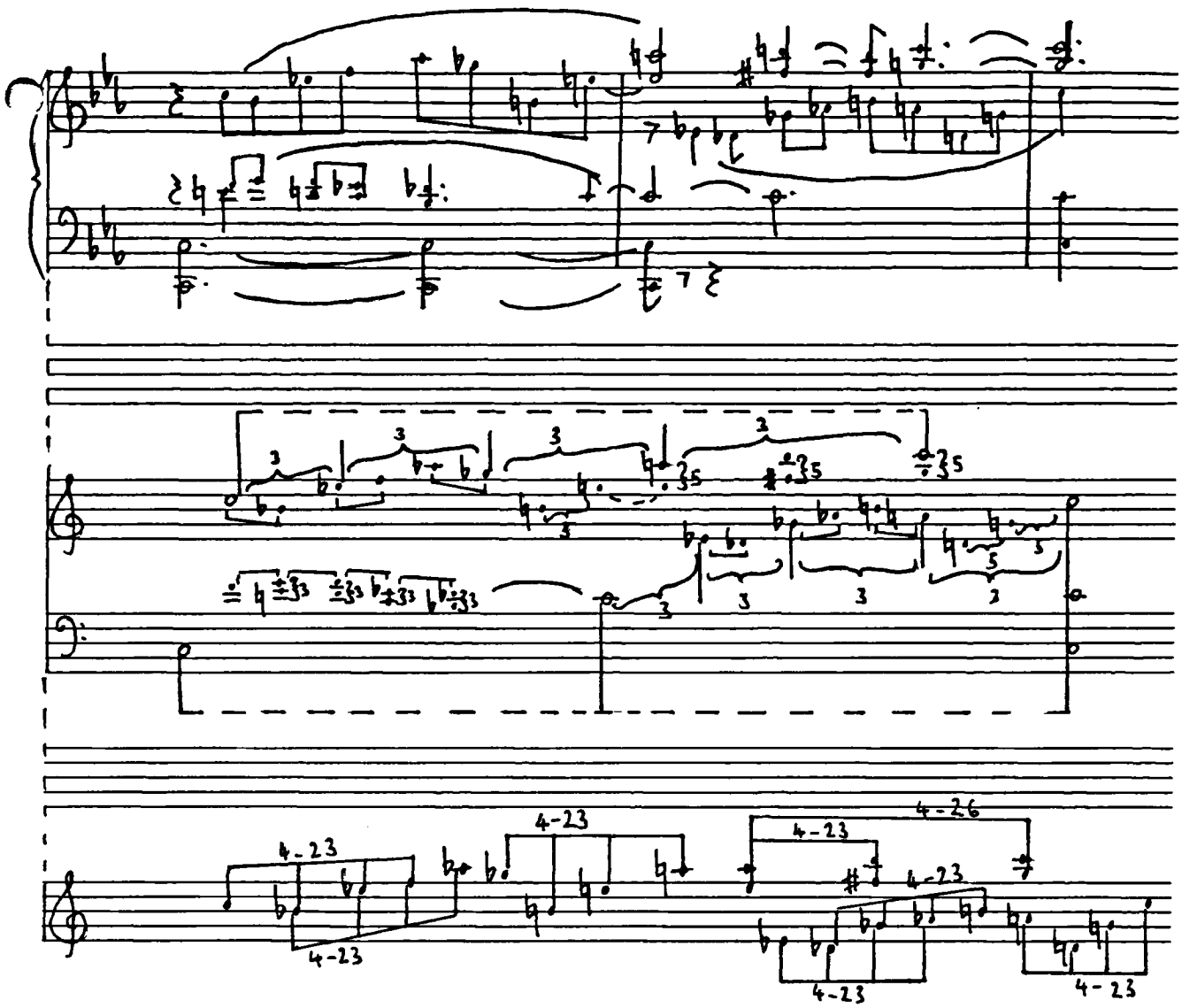


(b) Piano Sonata, I, 279 – 282

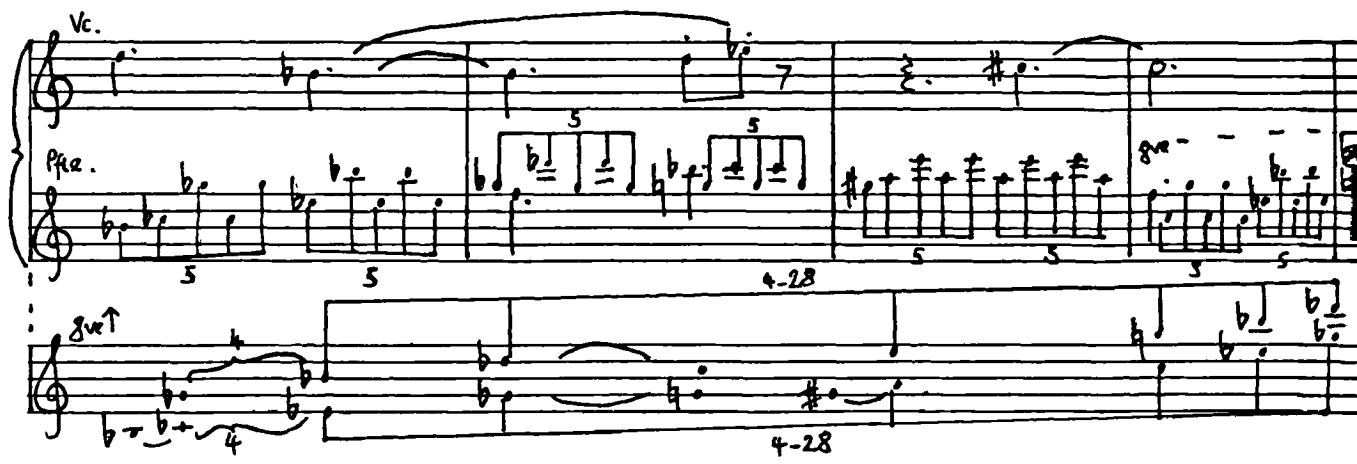


PAN-A4 12 STAVE

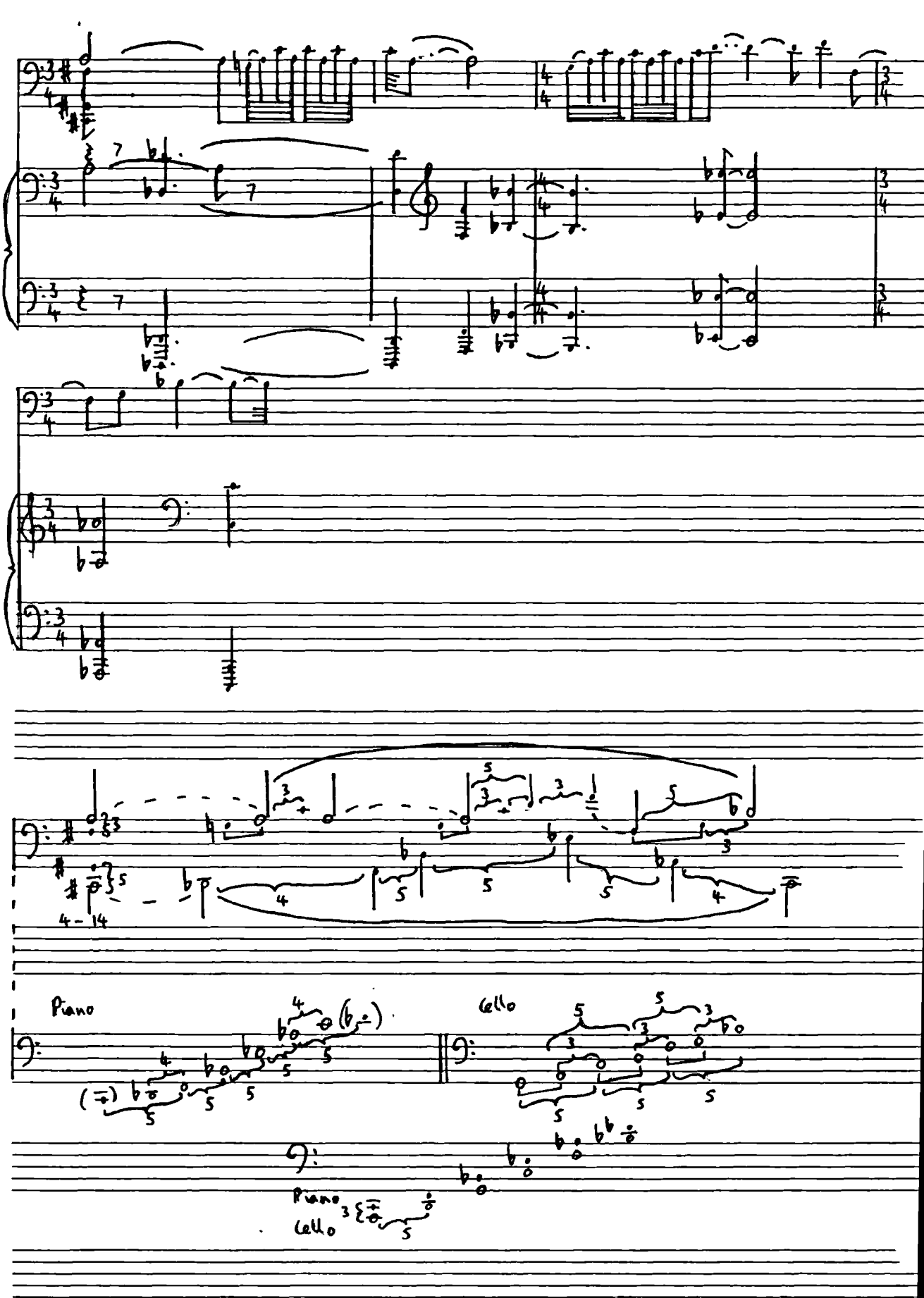
Ex. 6.9 (a) Piano Sonata, I, 83-5



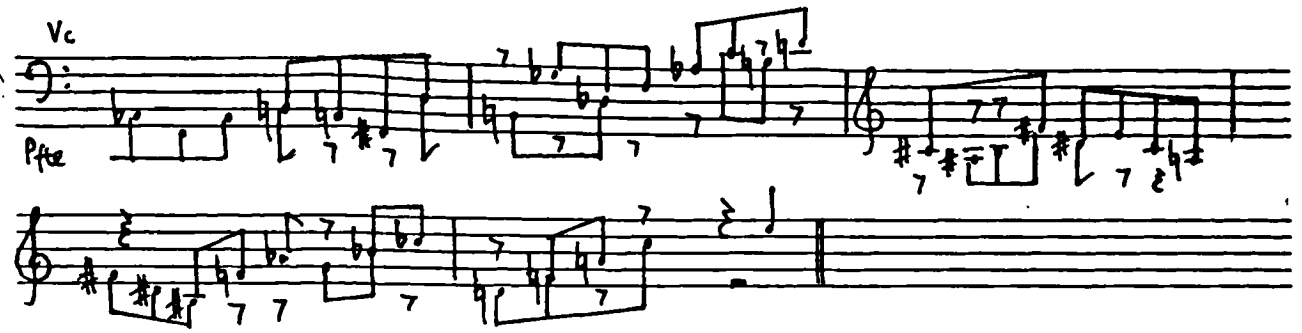
(b) Cello Sonata, II, 68-73



PAN-A4 12 STAVE

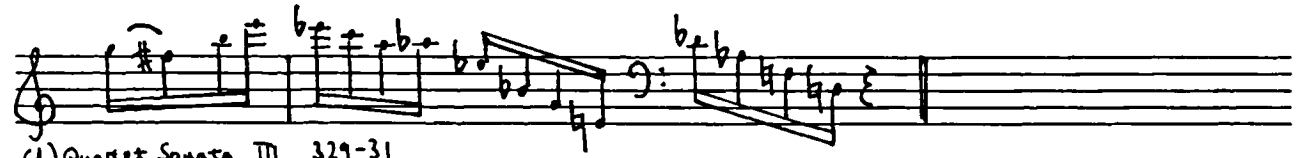

4-14
Piano
Cello
Piano
Cello

Ex. 6.10 (a) Cello Sonata, II, 136 - 140

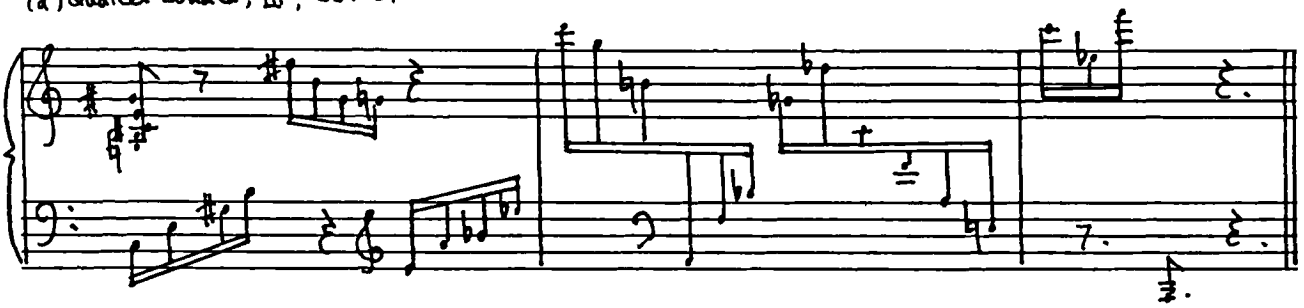


(b) 1st Quartet, III, 195-8

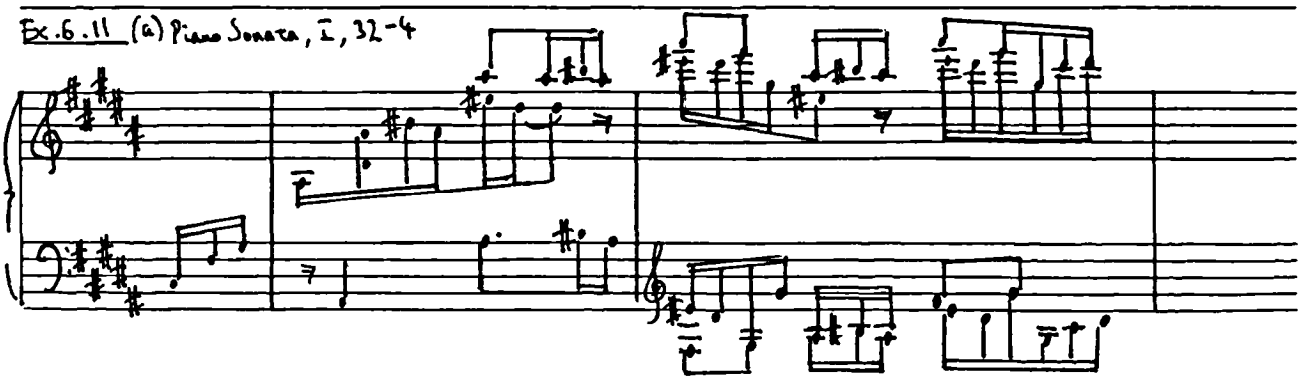
(c) Quartet Sonata, I, 16 - 17



(d) Quartet Sonata, III, 329-31



Ex. 6.11 (a) Piano Sonata, I, 32-4



(c) Cello Sonata
II, 197-9

Pno

(d) Eight Etudes and a Fantasy, I, 16-18

(e) Quartet Sonata, II, 143-150

Flt.

Hpschd.

Vc.

Hpschd. Manual I

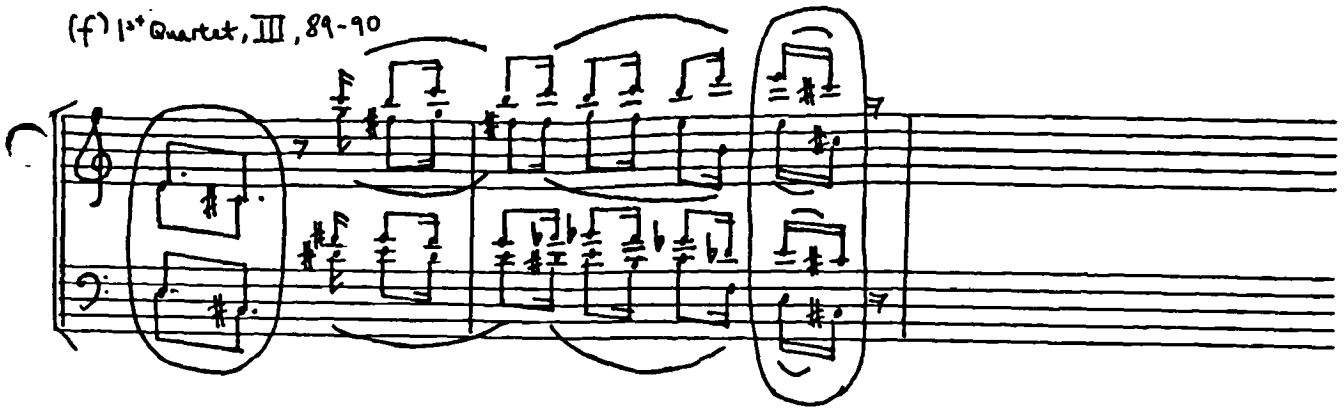
Manual I

Manual II

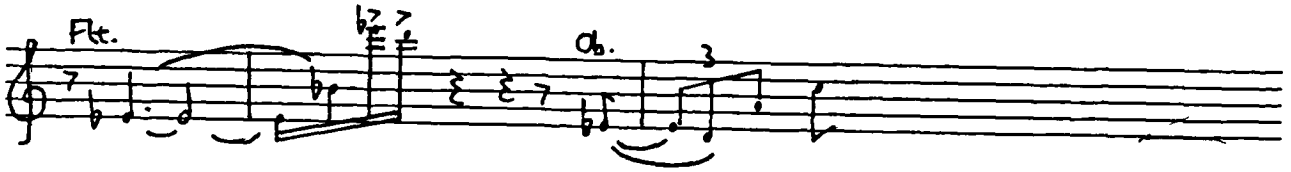
Manual I

PAN-A4 12 STAVE

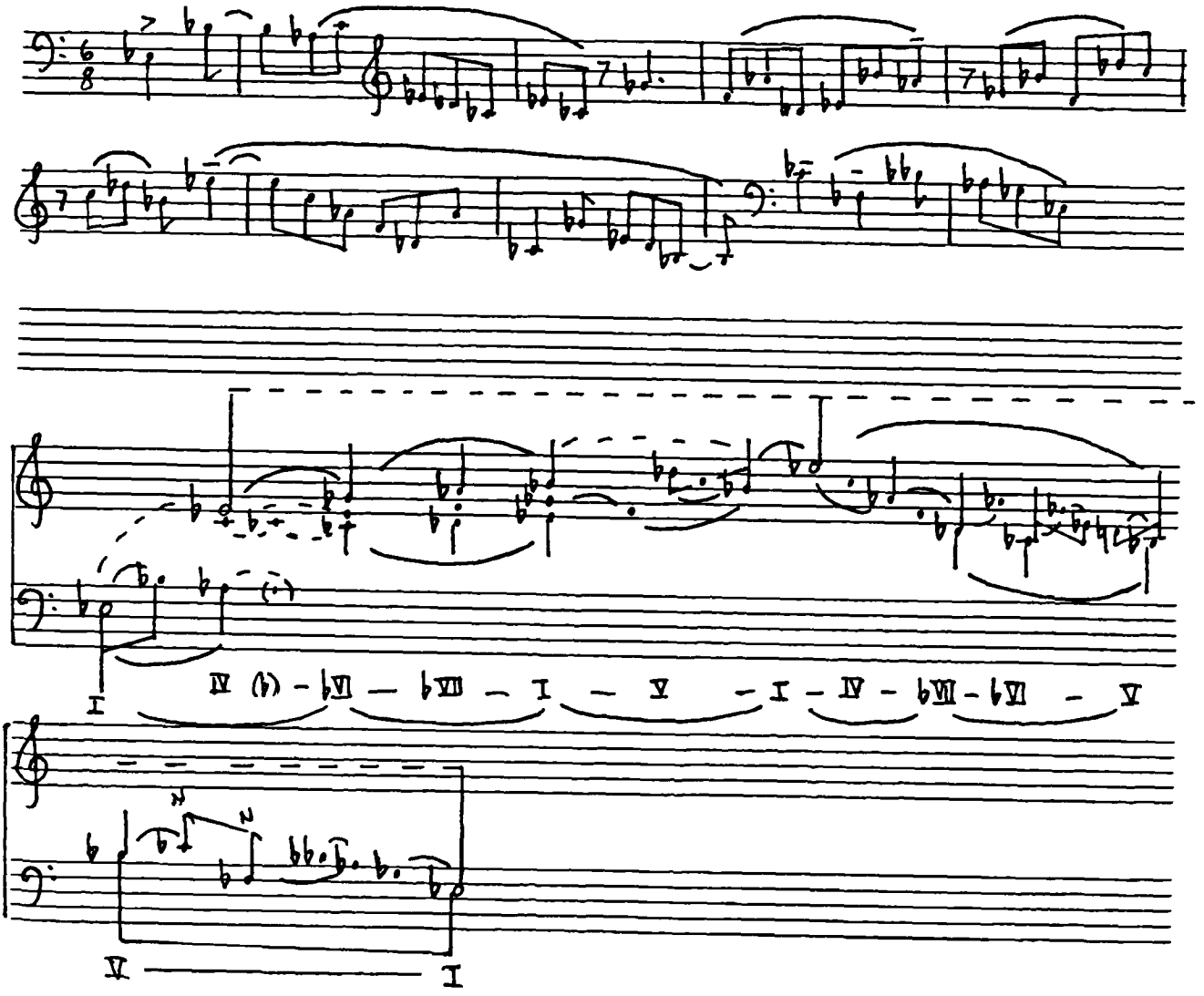
(f) 1st Quartet, III, 89-90



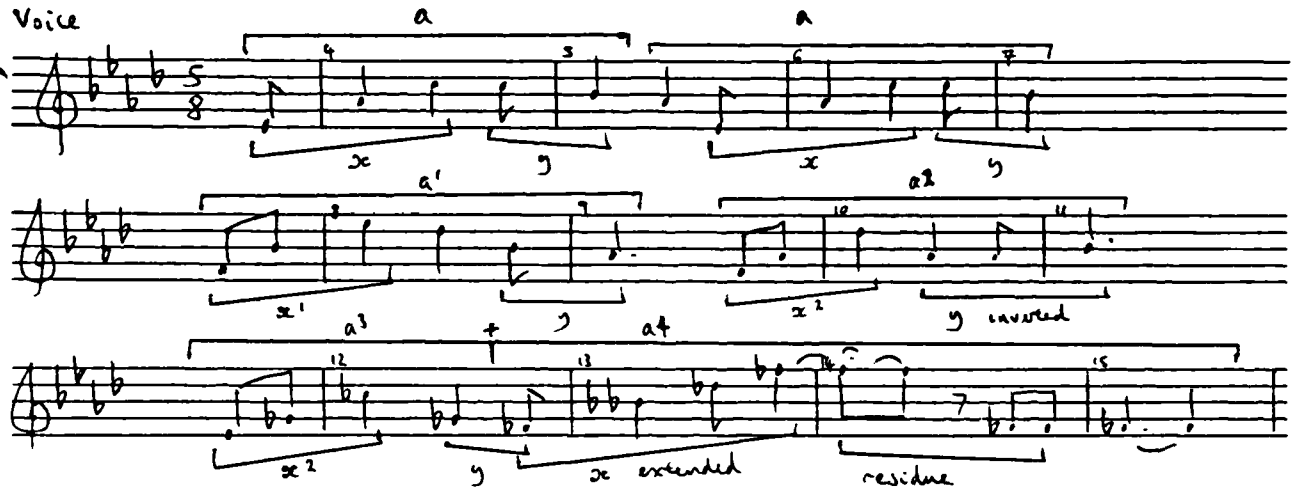
(g) Quartet Sonata, I, 18-20

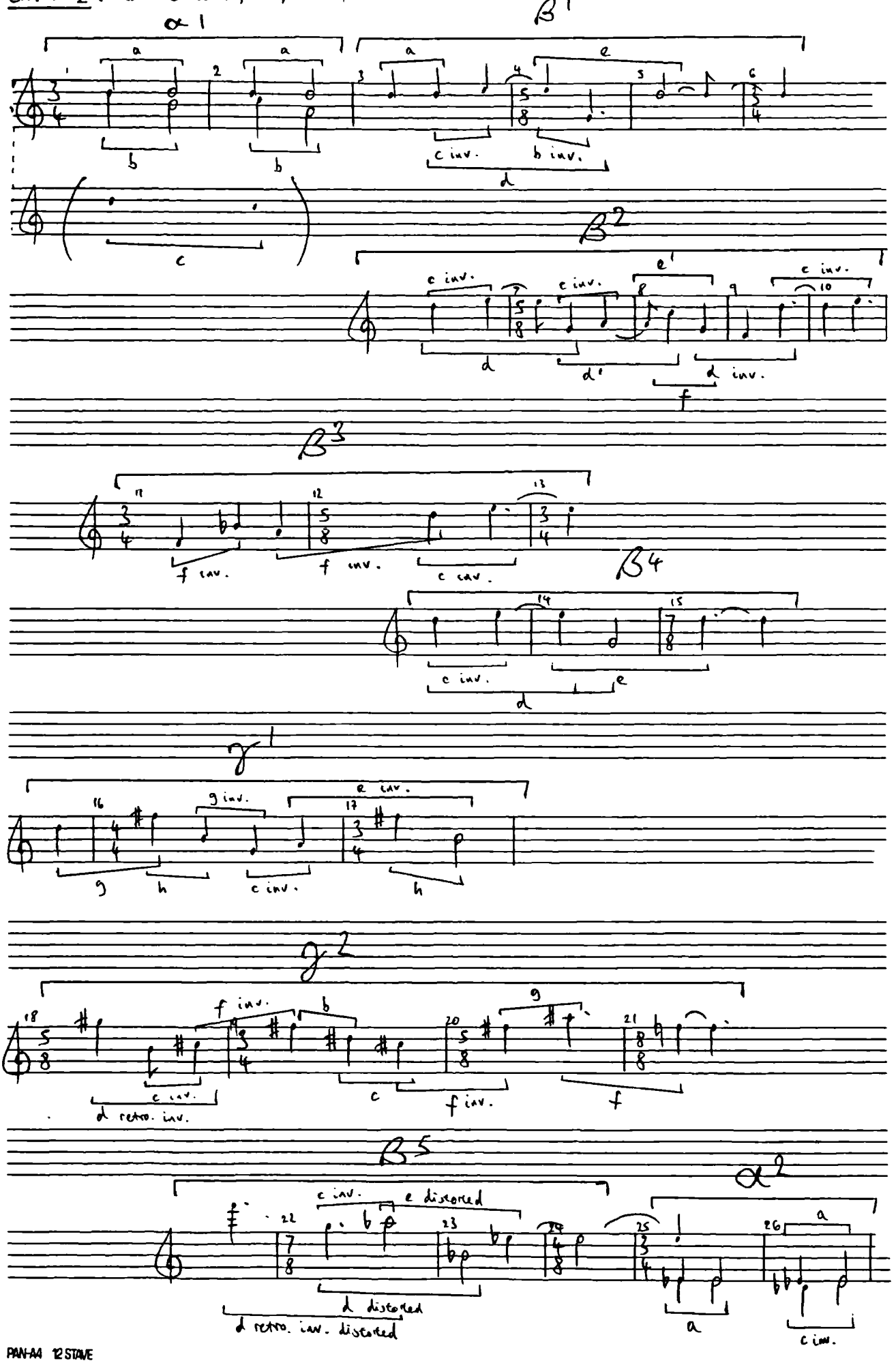


Ex. 6.12 Piano Sonata, II, 103-112

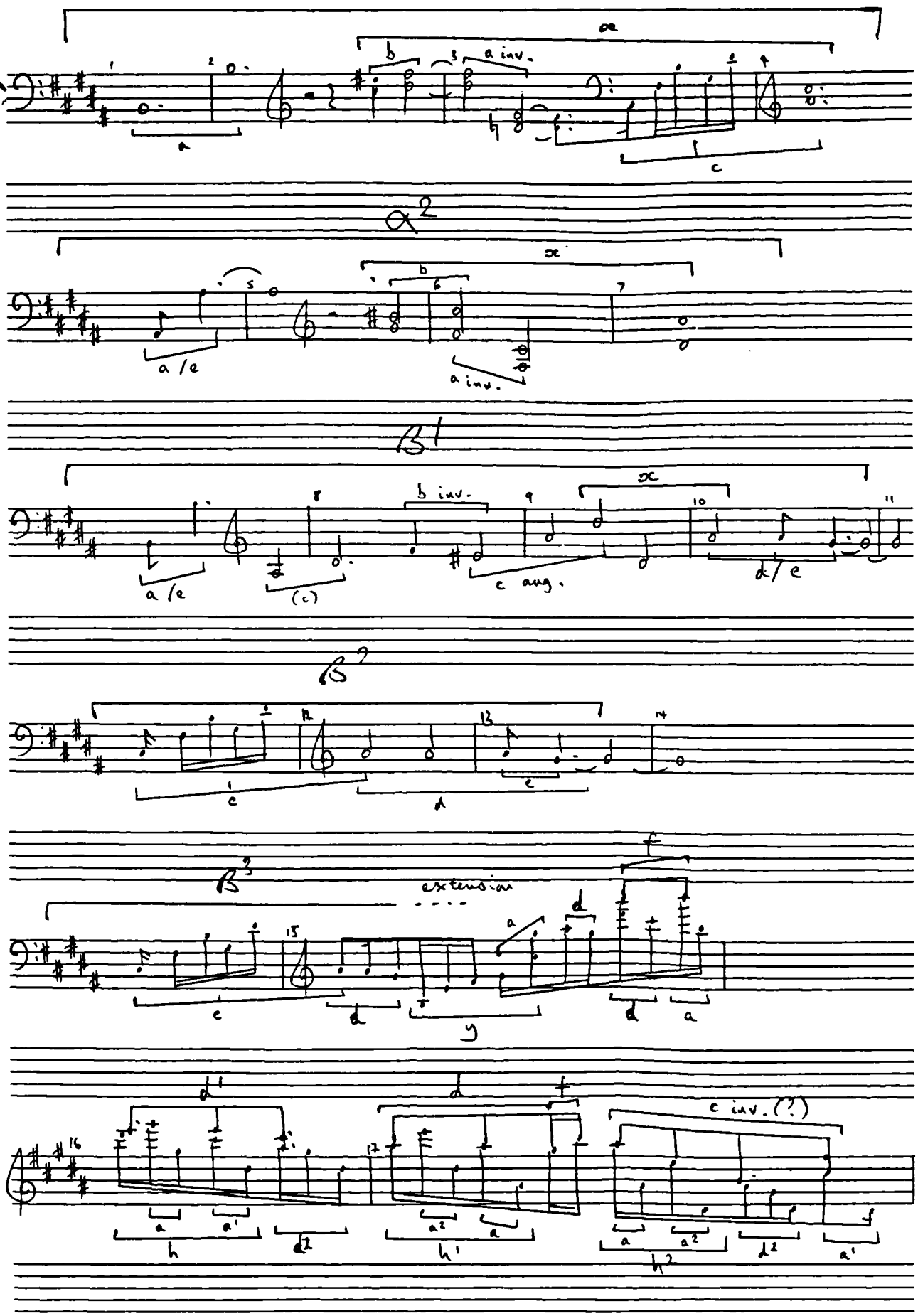


Ex. 7.1 The Rose Family, 3-15




α 1
B1
B2
B3
B4
γ 1
γ 2
B5
α 2
PAN-A4 12 STAVE

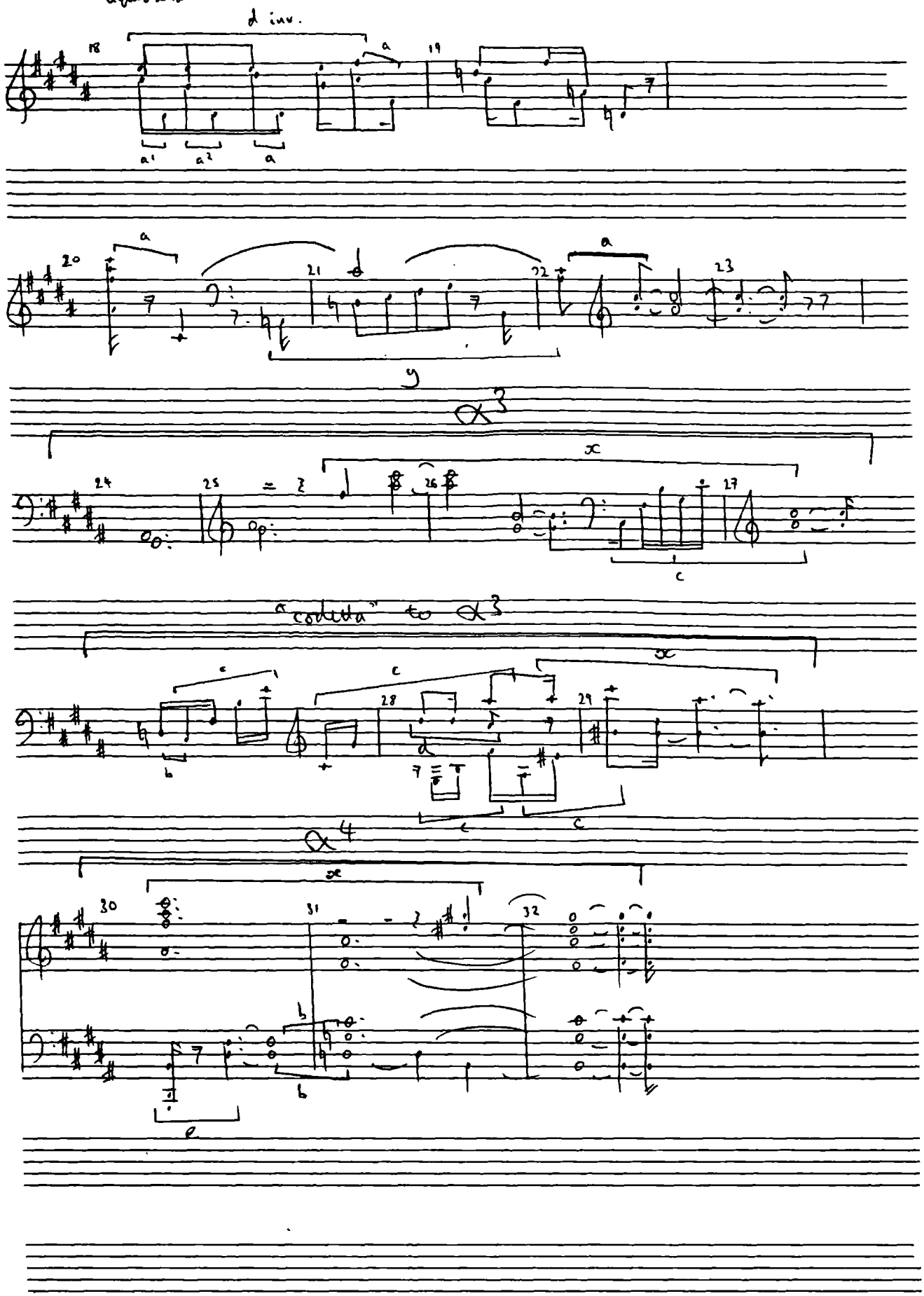
Ex. 7.3. Piano Sonata, I, 1-32



Contd. over

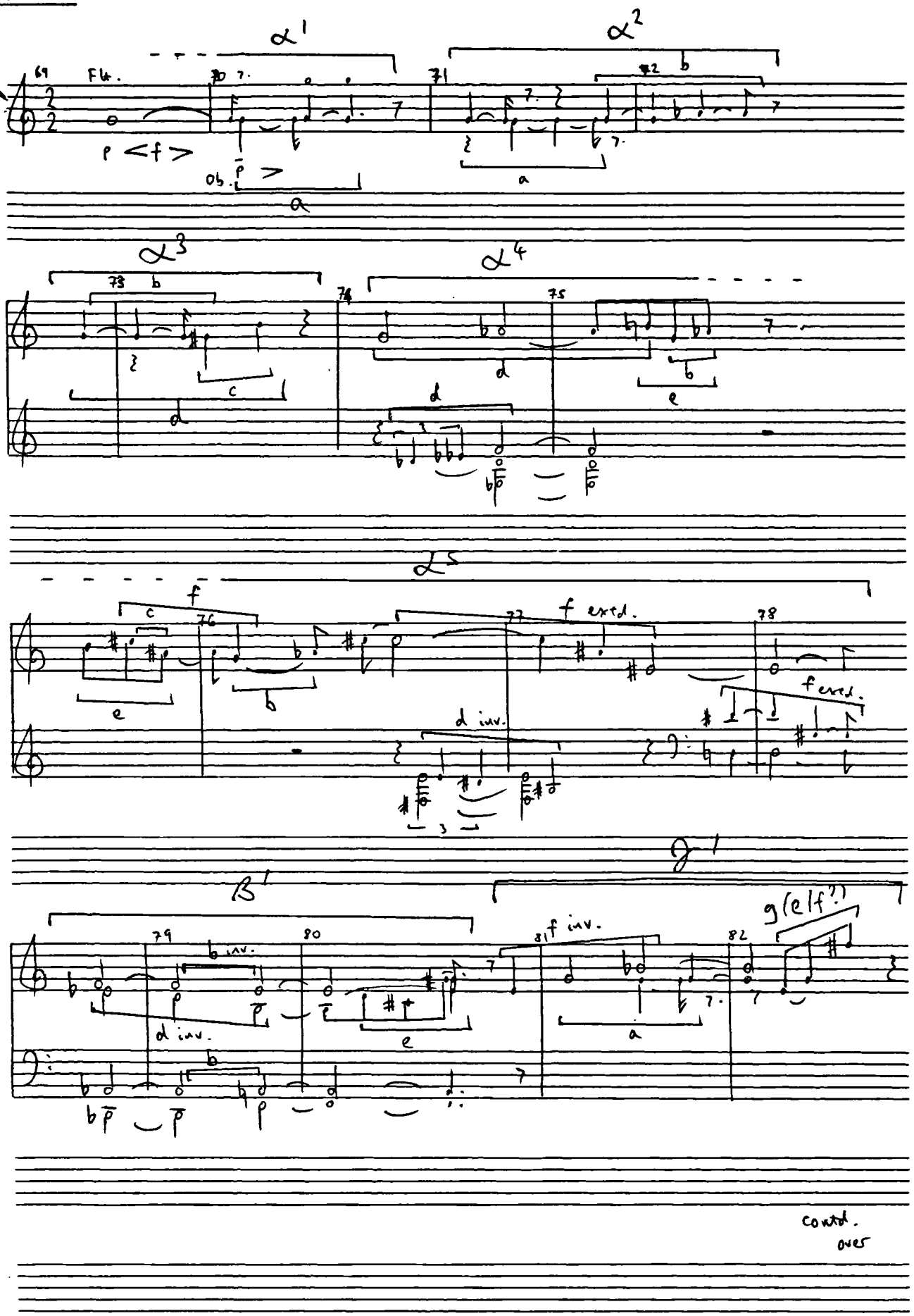
PAN-A4 12 STAVE

liquidation . . .



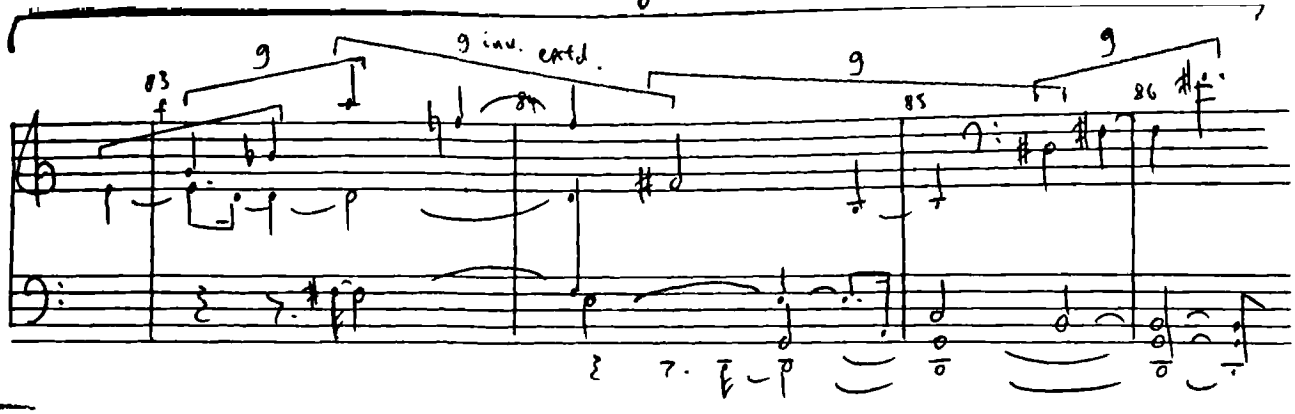
PAN-A4 12 STAVE

Ex. 7.4 Quartet Sonata, II, 69-99



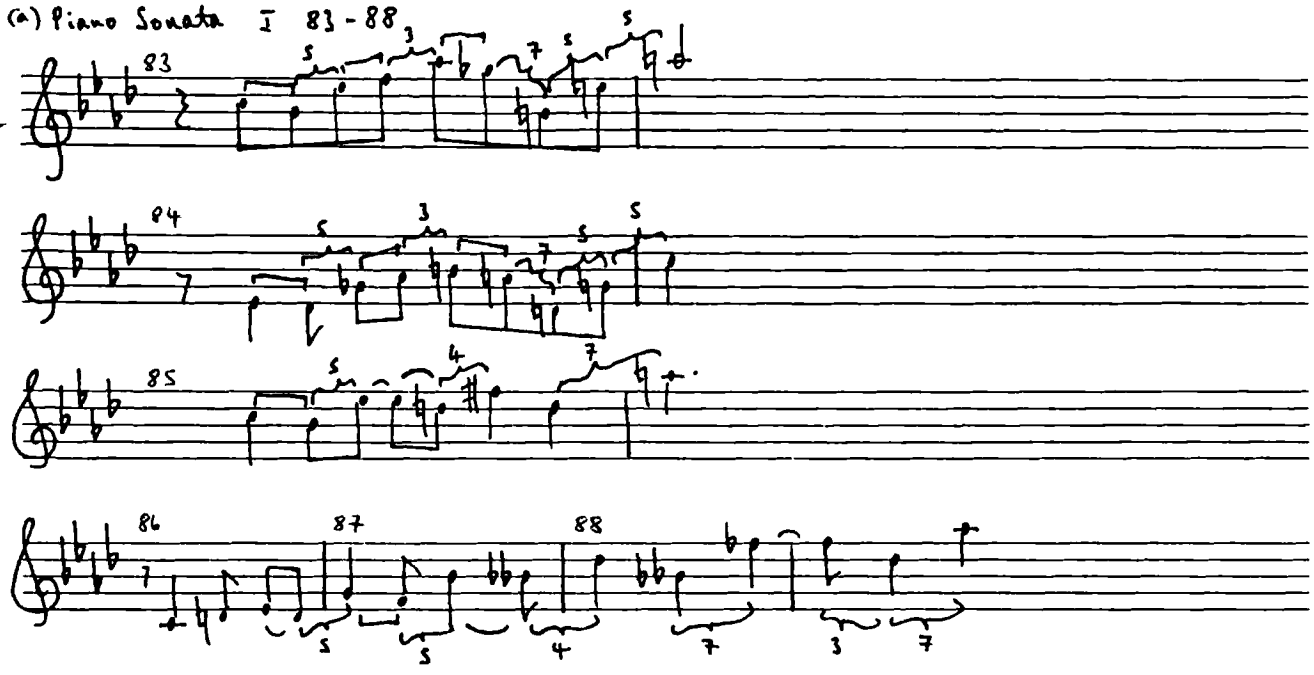
contd.
over

PAN-A4 12 STAVE

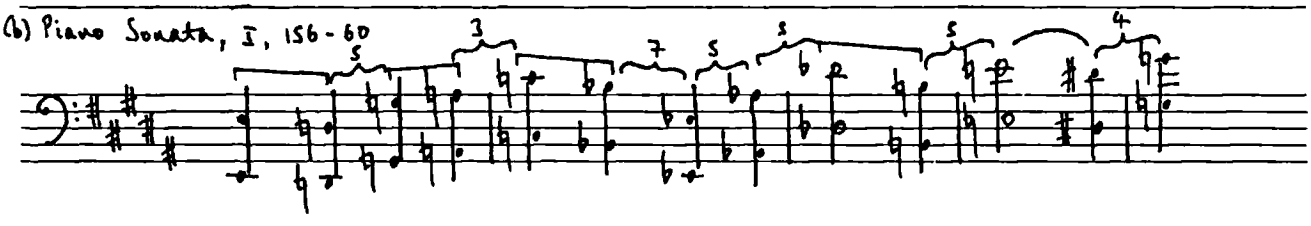


Ex. 7.5

(a) Piano Sonata I 83 - 88

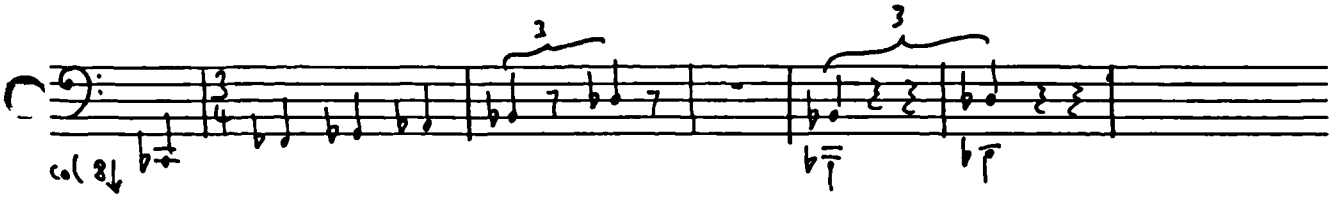


(b) Piano Sonata, I, 156 - 60

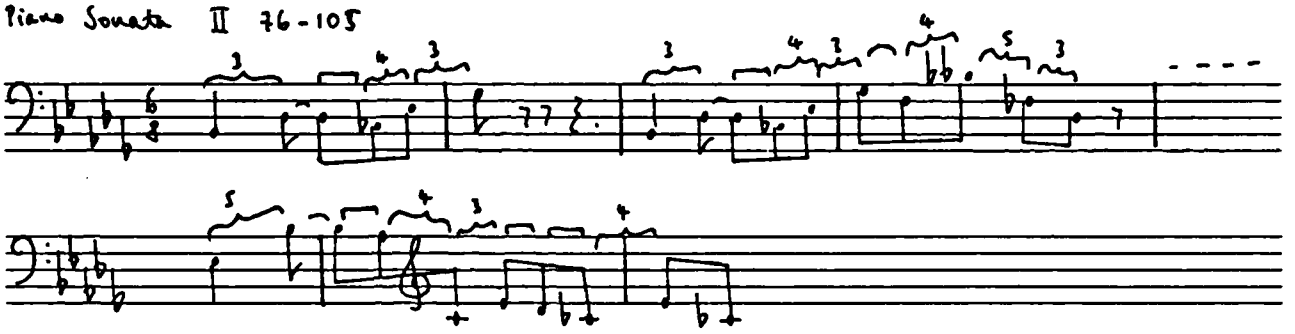


(c) Piano Sonata, I, 205 - 13

Ex. 7.6 (a) Piano Sonata II 68-73

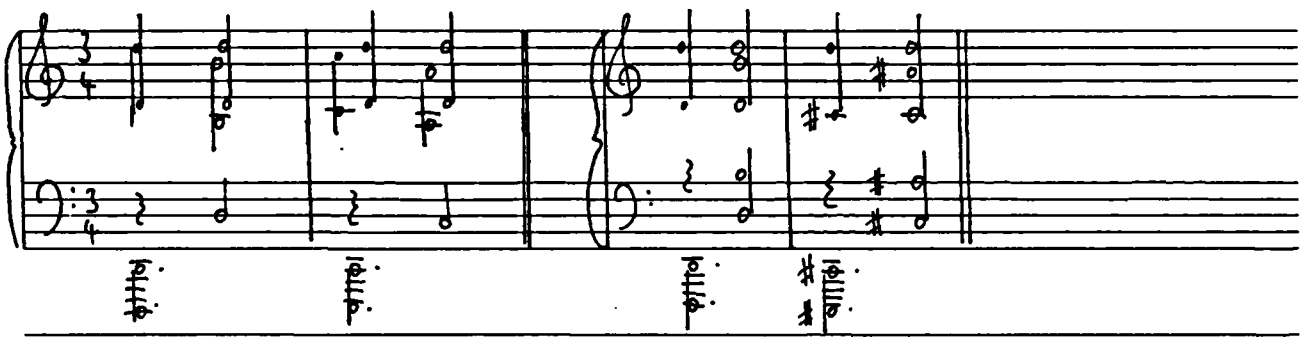


Piano Sonata II 76-105

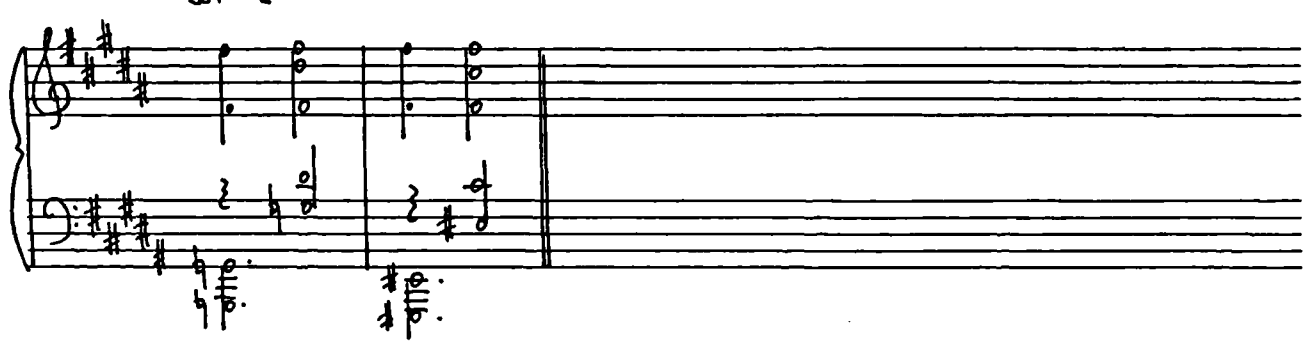


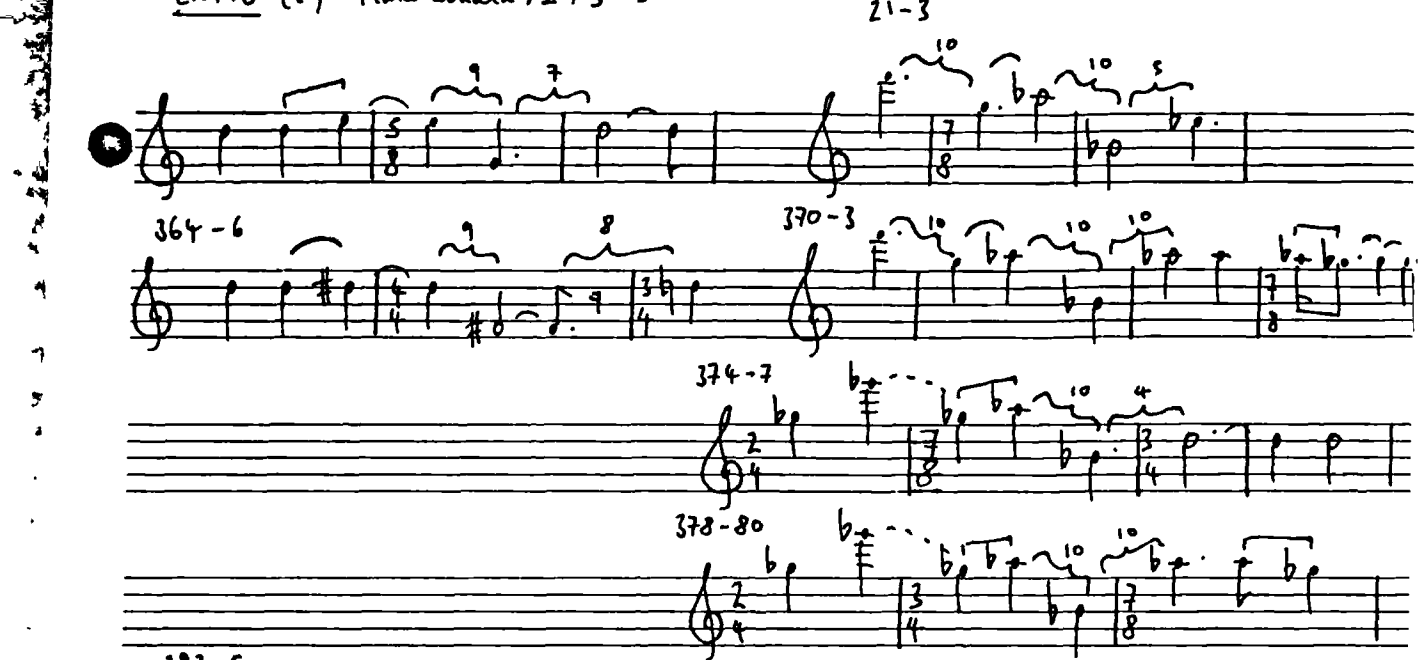
(b) Piano Sonata II 1-2

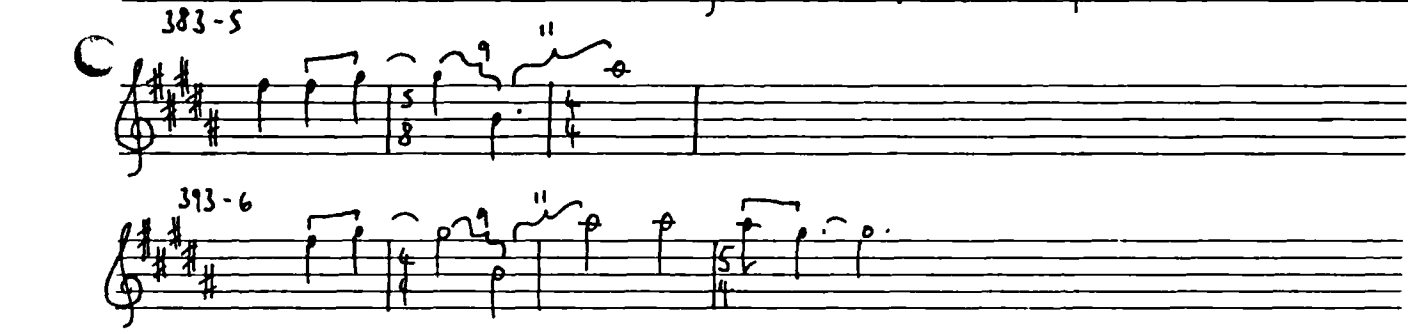
362-3



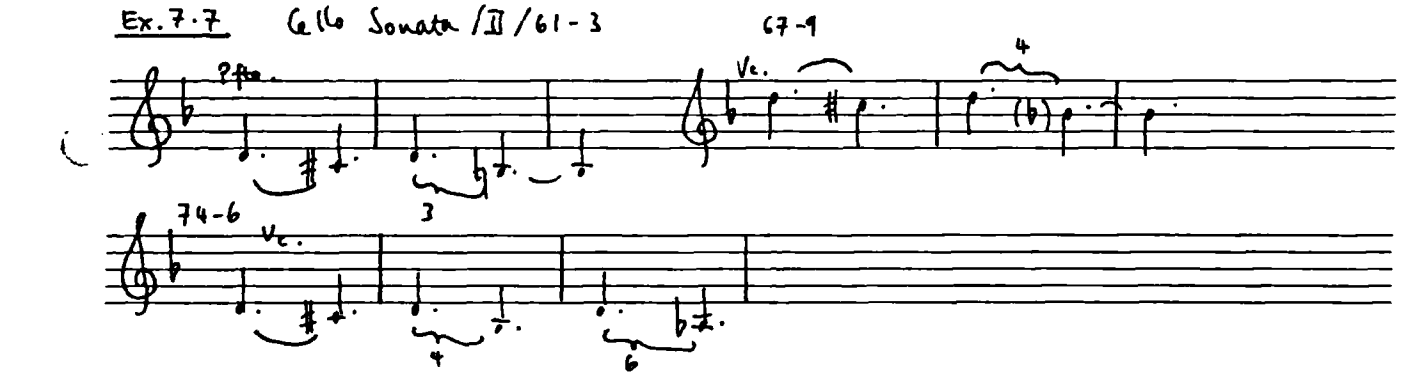
381-2



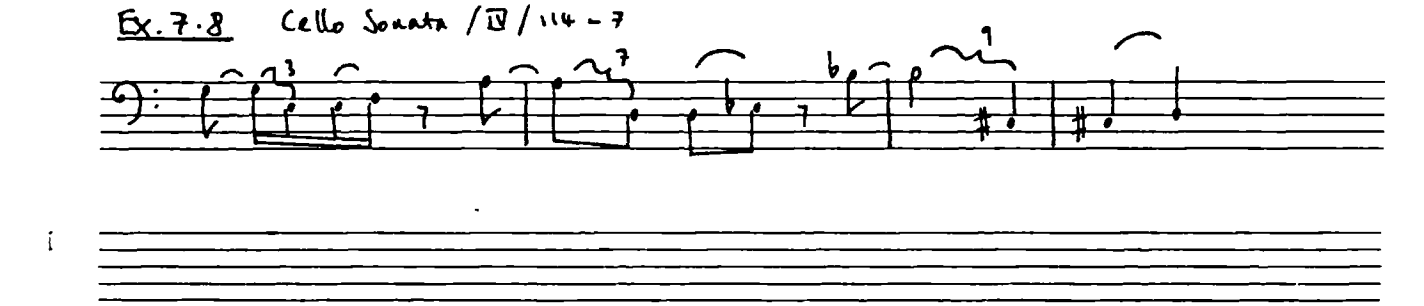




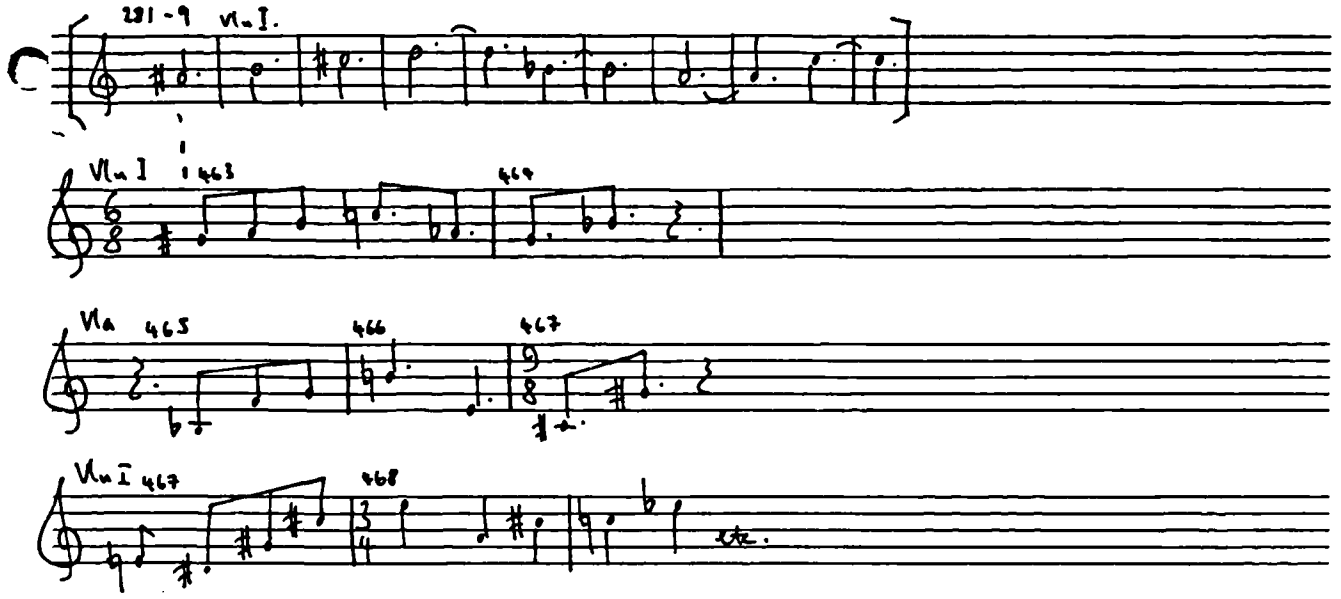
Ex. 7·7 Cello Sonata / II / 61-3



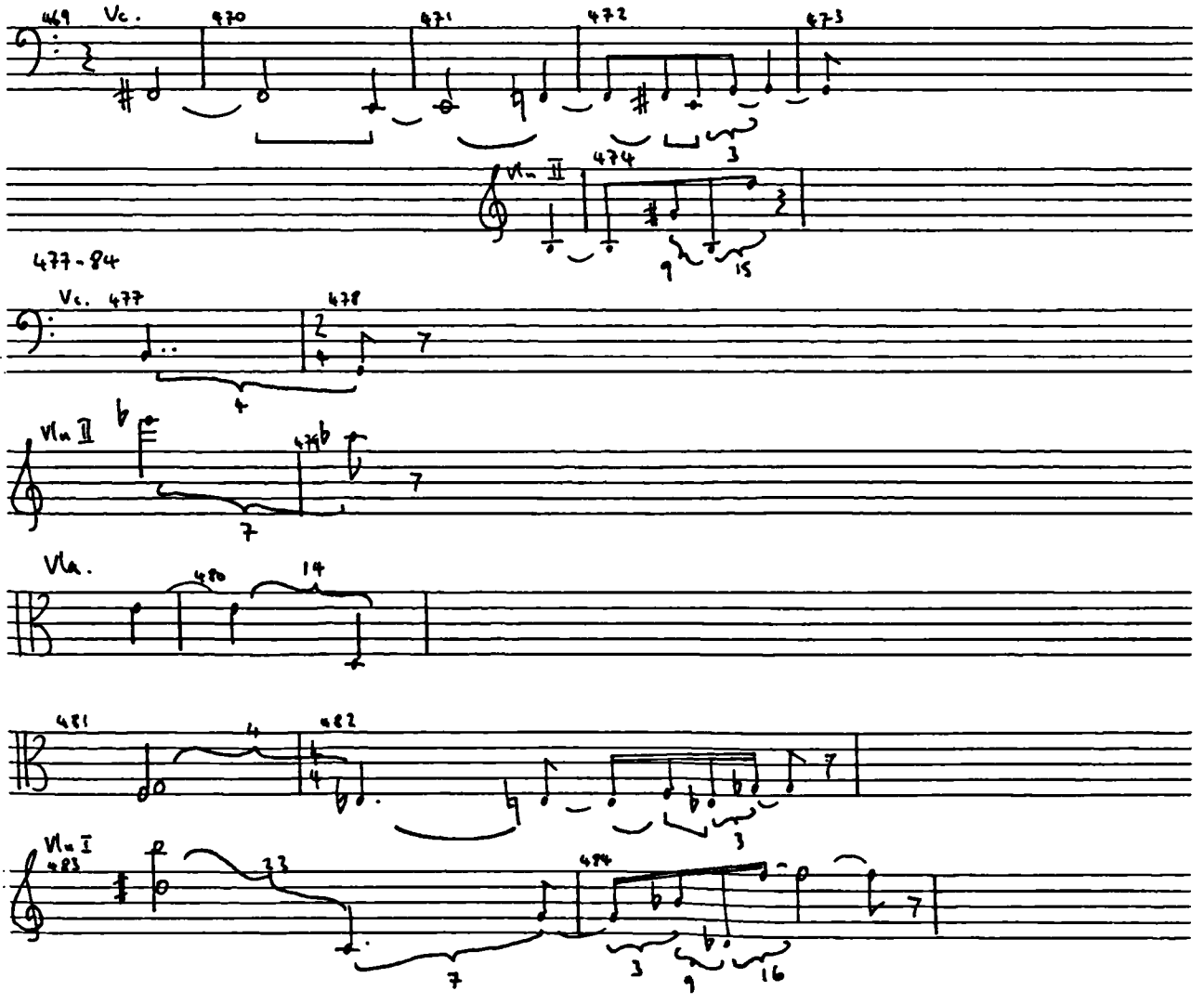
Ex. 7·8 Cello Sonata / IV / 114-7



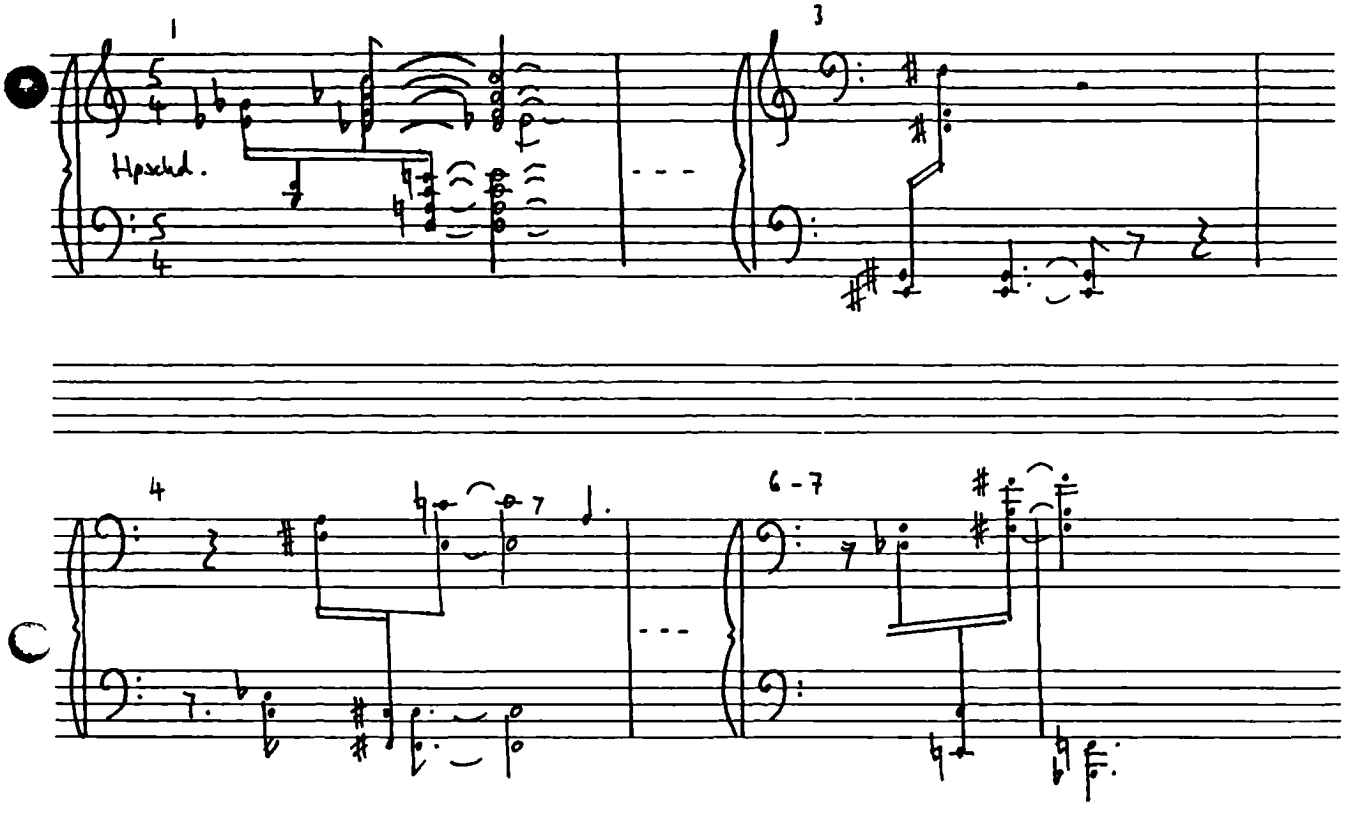
Ex.7.9 First Quartet /III / 463 - 8



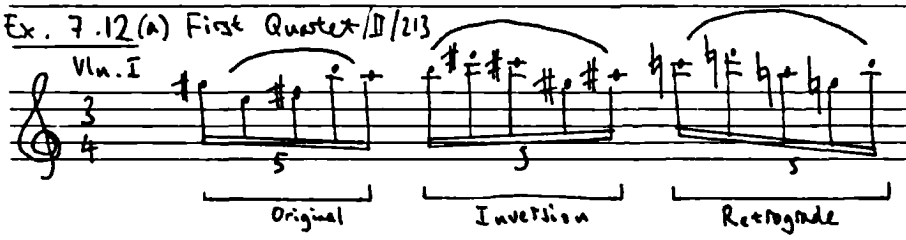
Ex.7.10 First Quartet /III / 469 -73



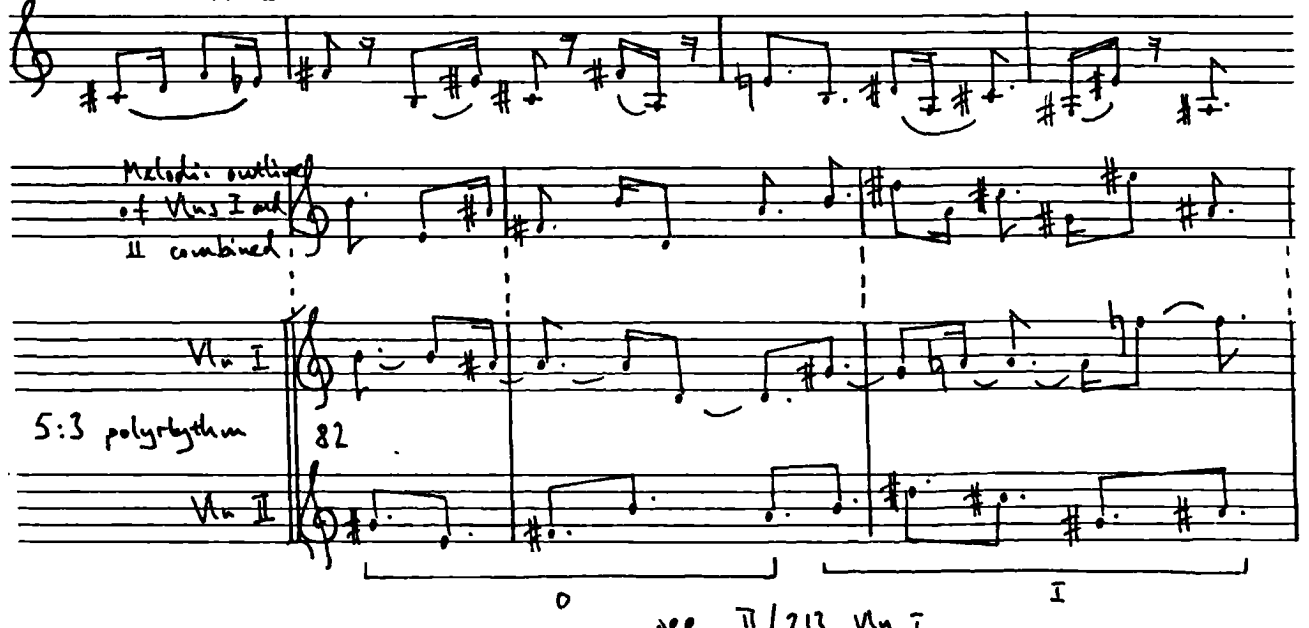
Ex. 7.11 Quartet Sonata / I / 1-7



Ex. 7.12 (a) First Quartet / II / 213

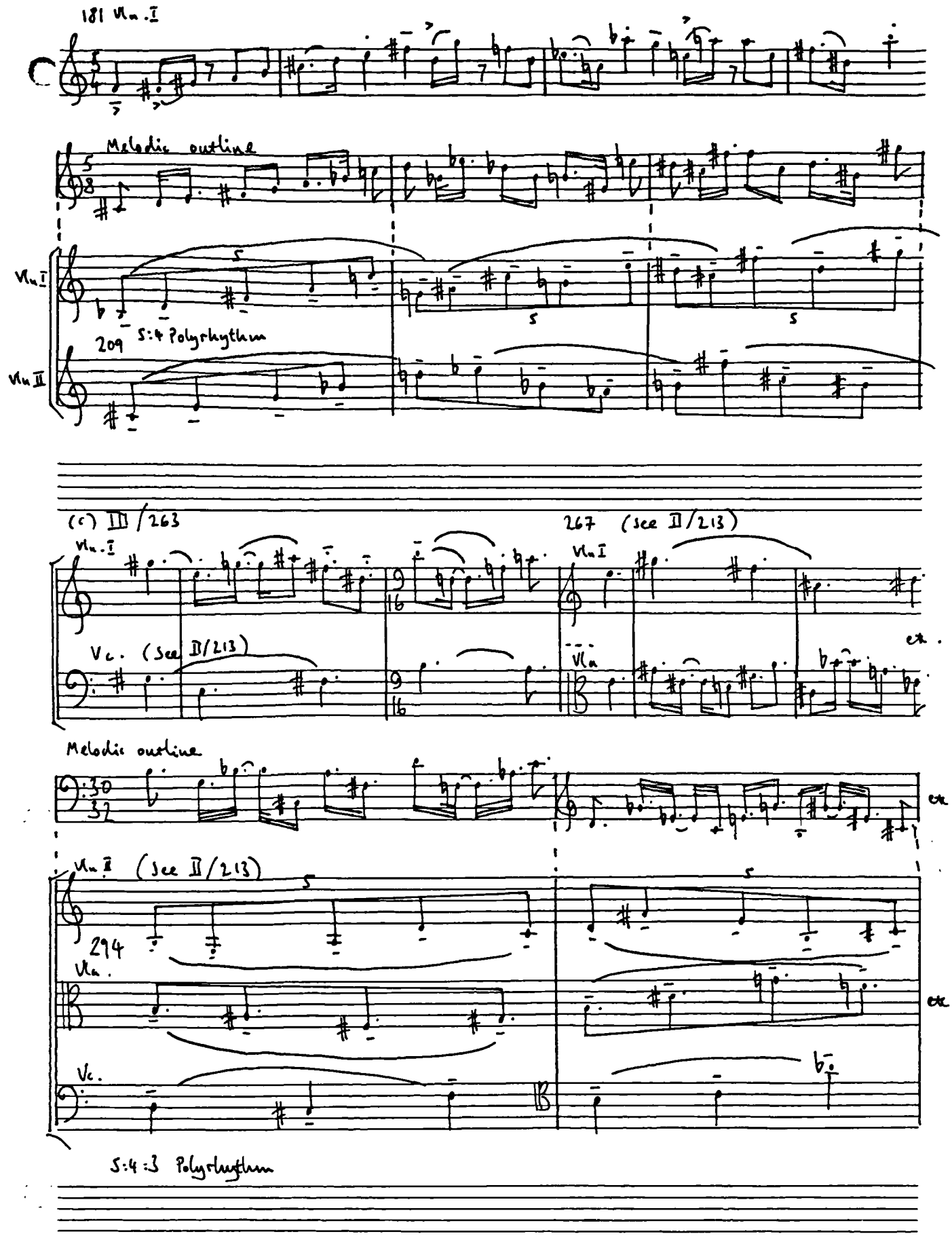


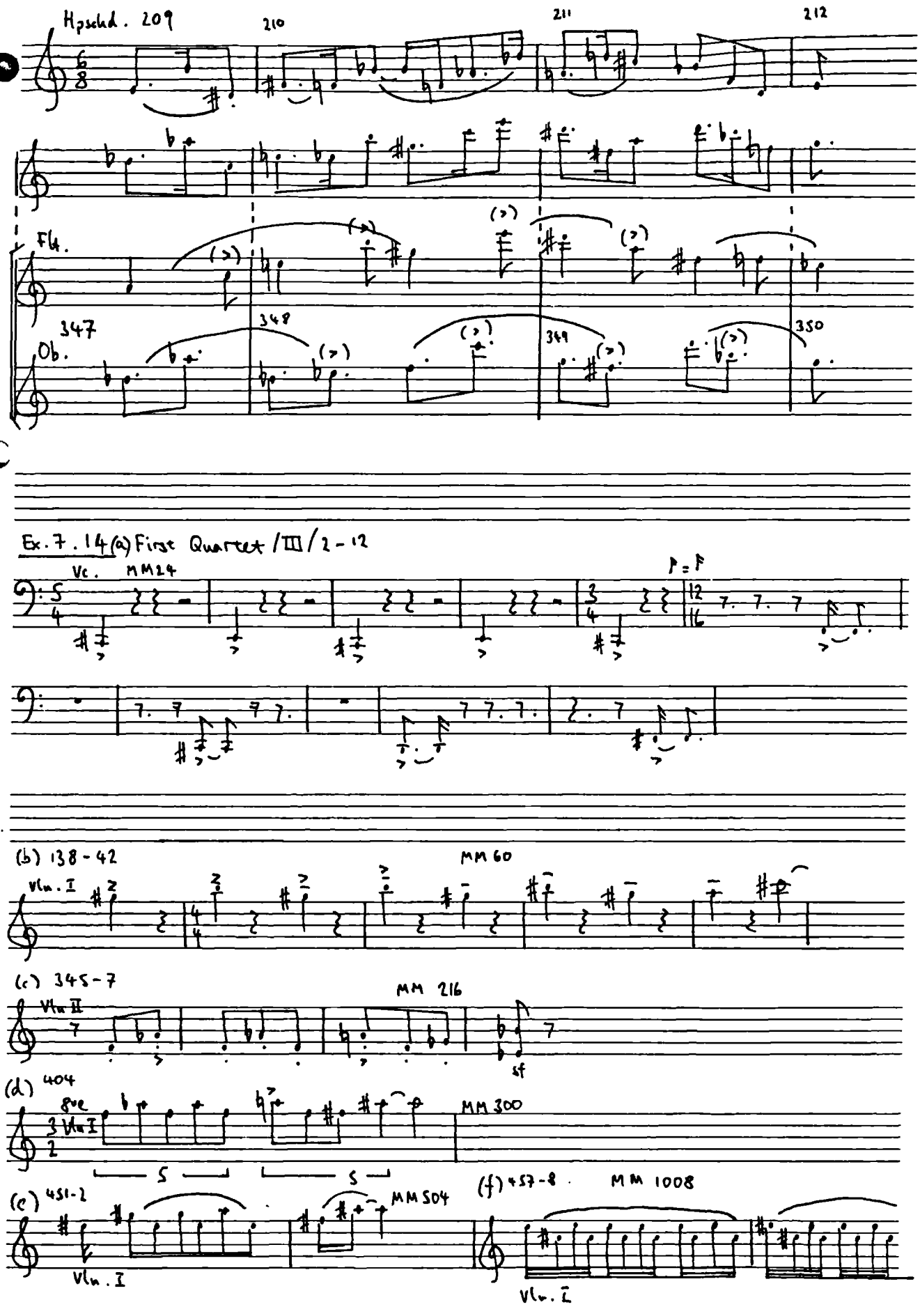
III / 77-80 Vln I Also see 248-50, Vla.



PAN-A4 12 STAVE

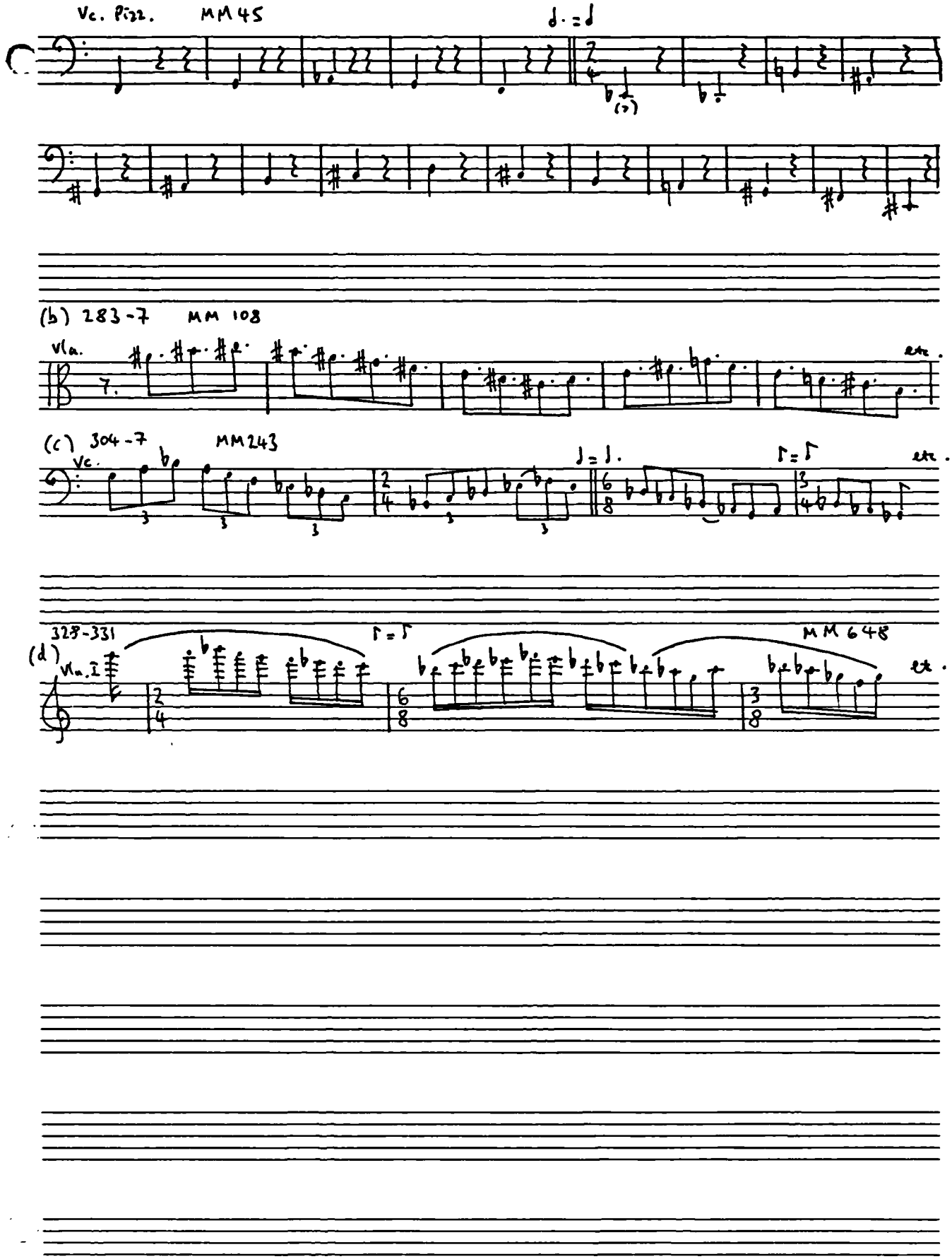
Ex. 7.12 contd. (b) First Quartet / III



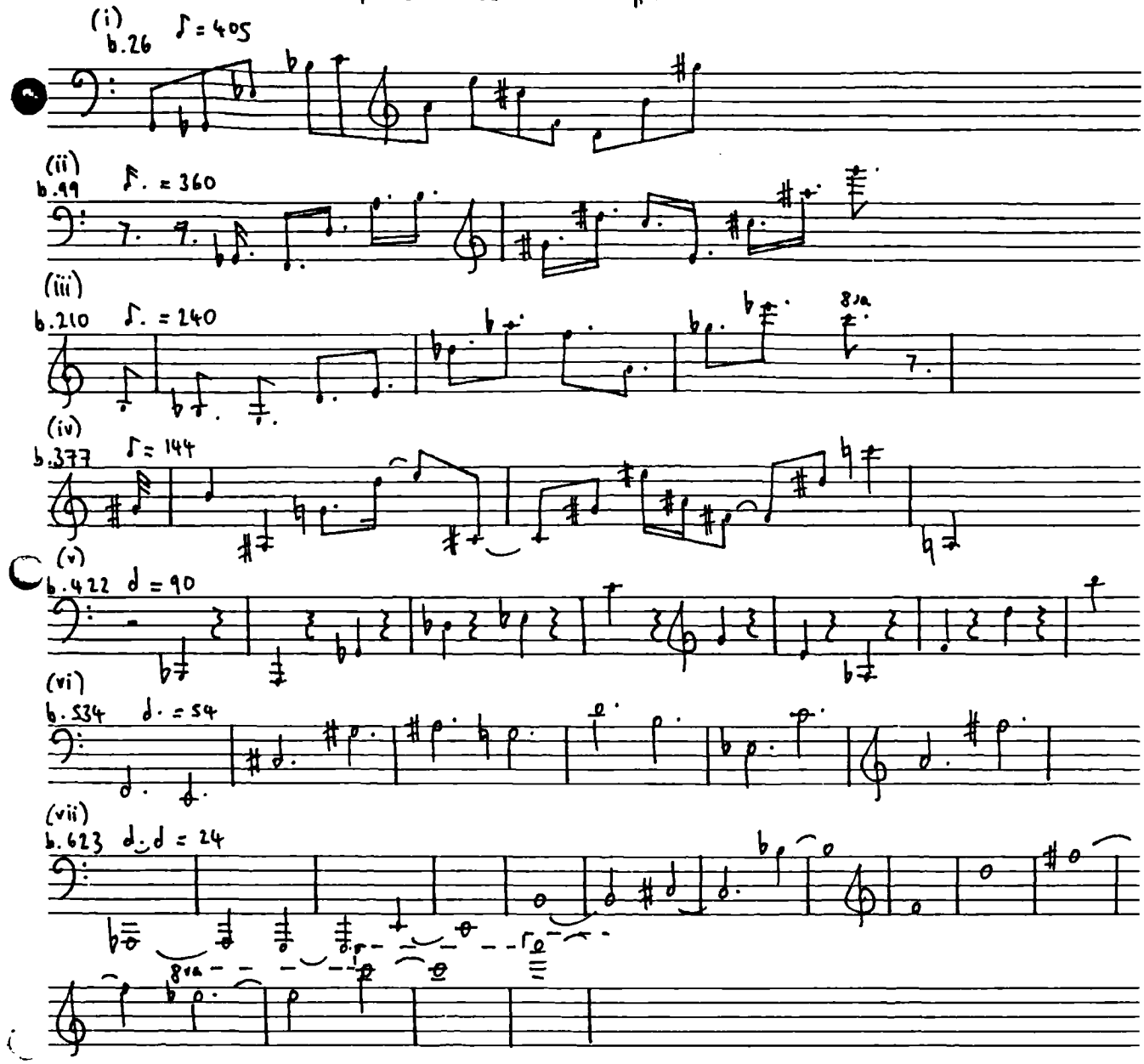


PAN-A4 12 STAVE

Ex.7.15 First Quartet /III /(a) 199-218

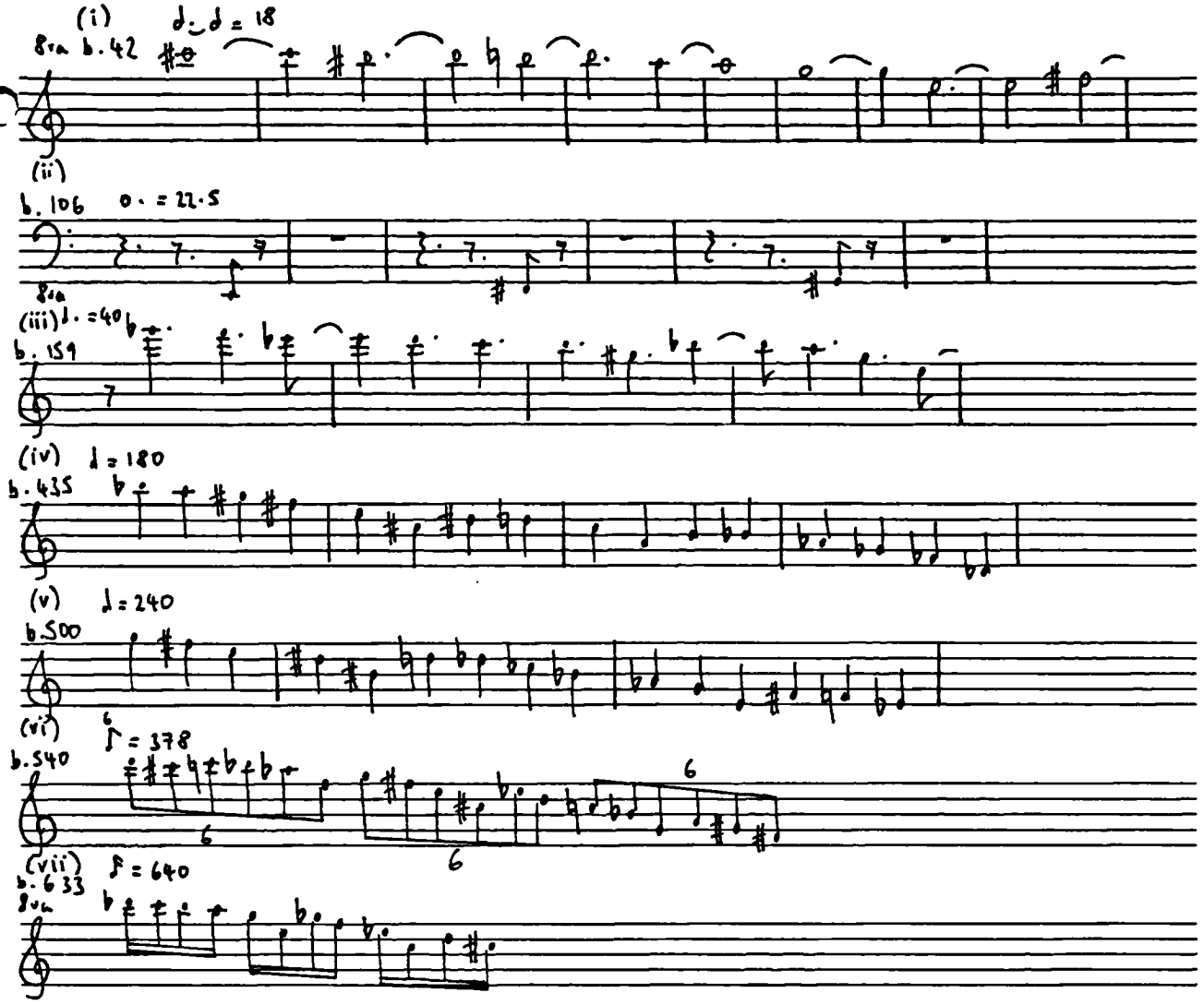


Ex. 7.16 Variations for Orchestra (See [Schiff, 1983: 177-9]) (a) "Ritornello B"



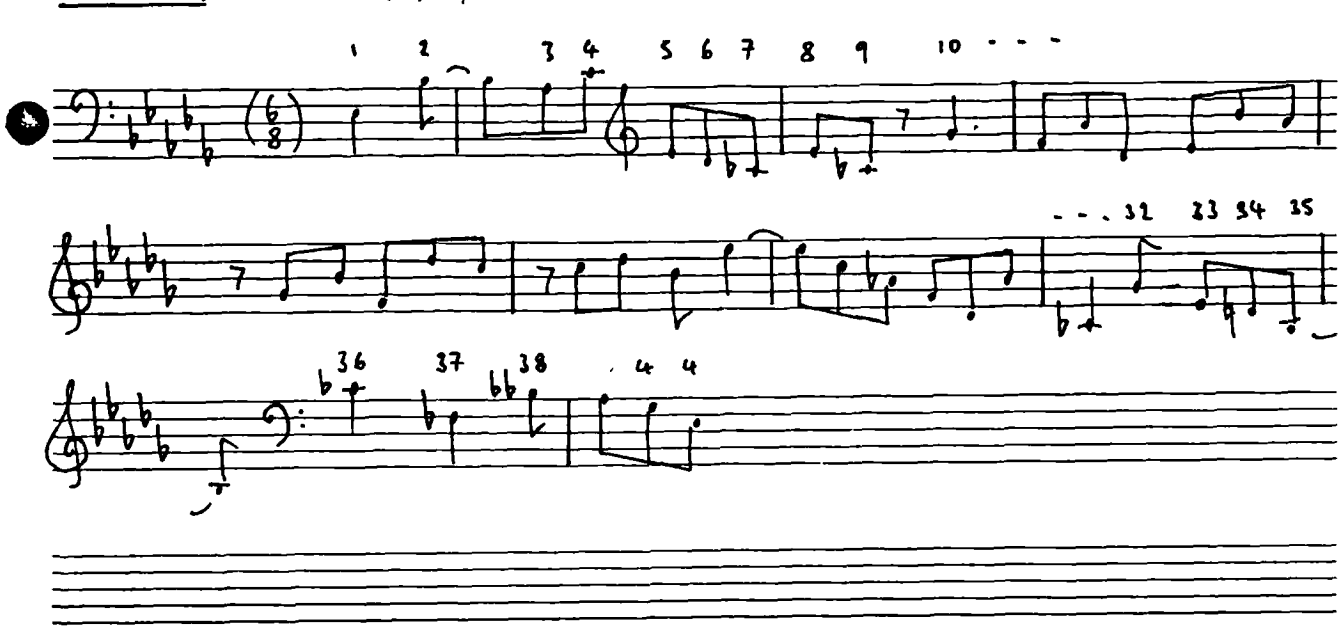
PAN-A4 12 STAVE

Ex.7.16 (b) "Ritornello A"

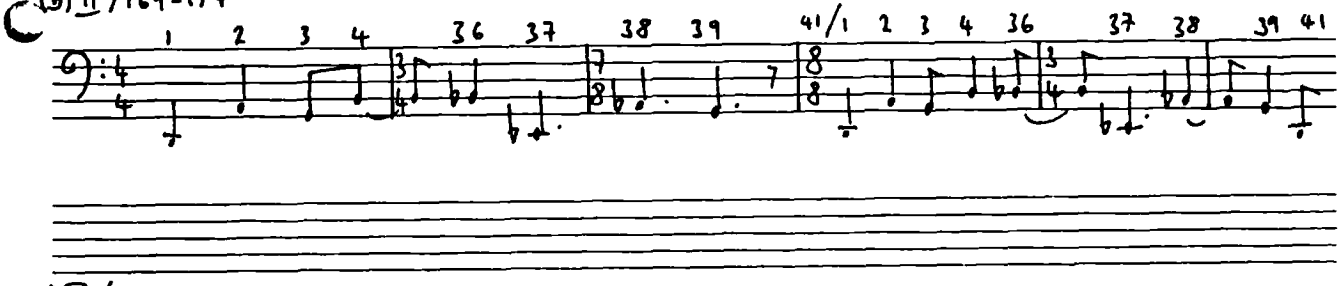


PAN-A4 12 STAVE

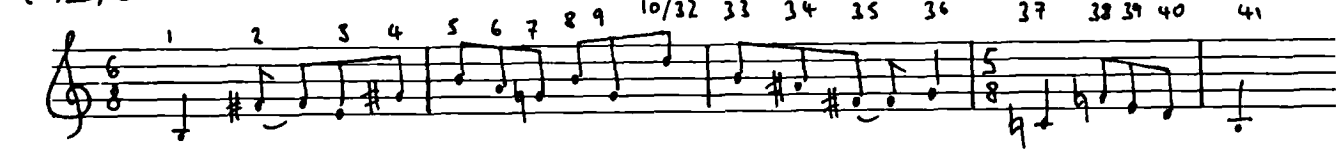
Ex.7.17(4) Piano Sonata /II/105 - 112



(b) II /169-174

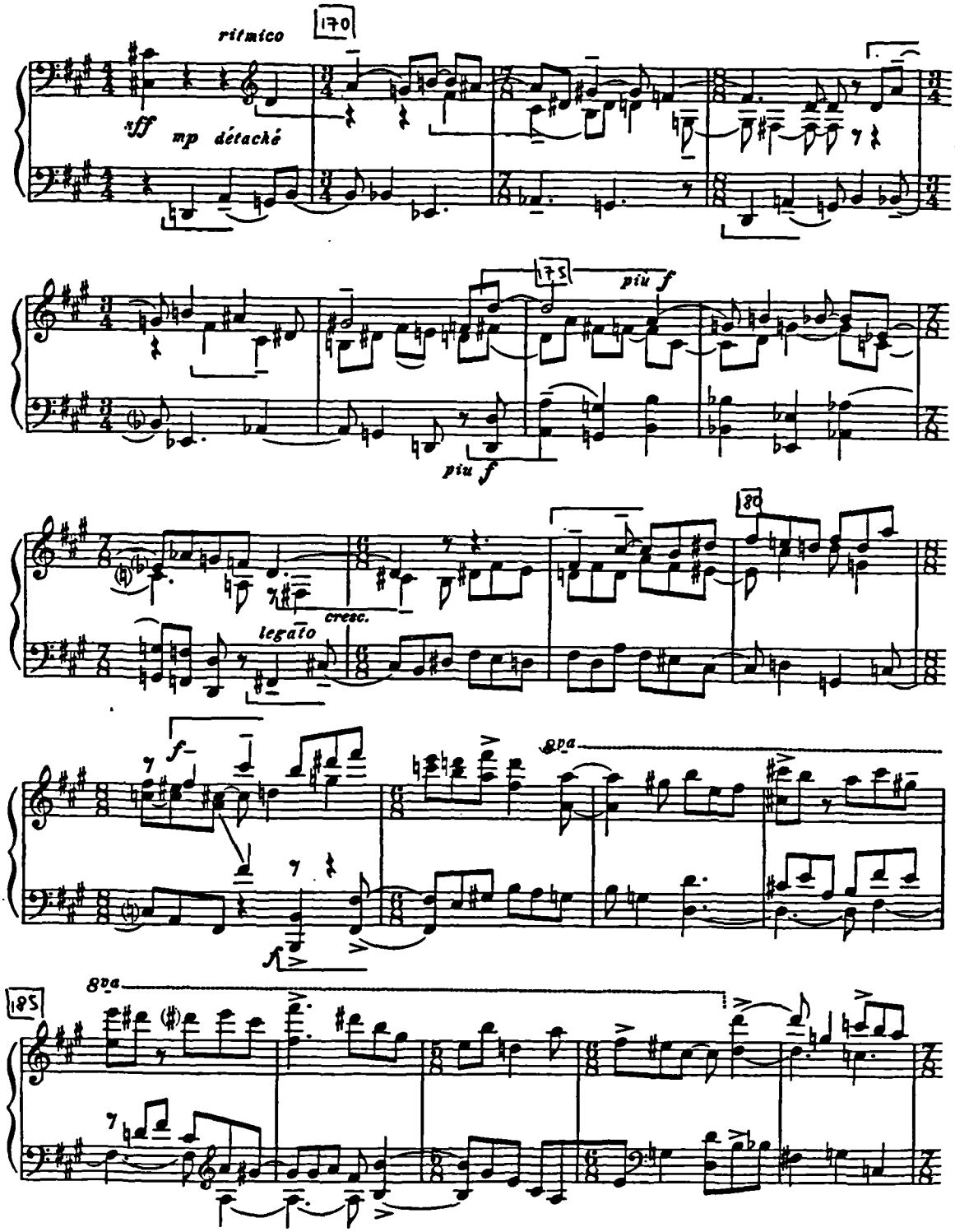


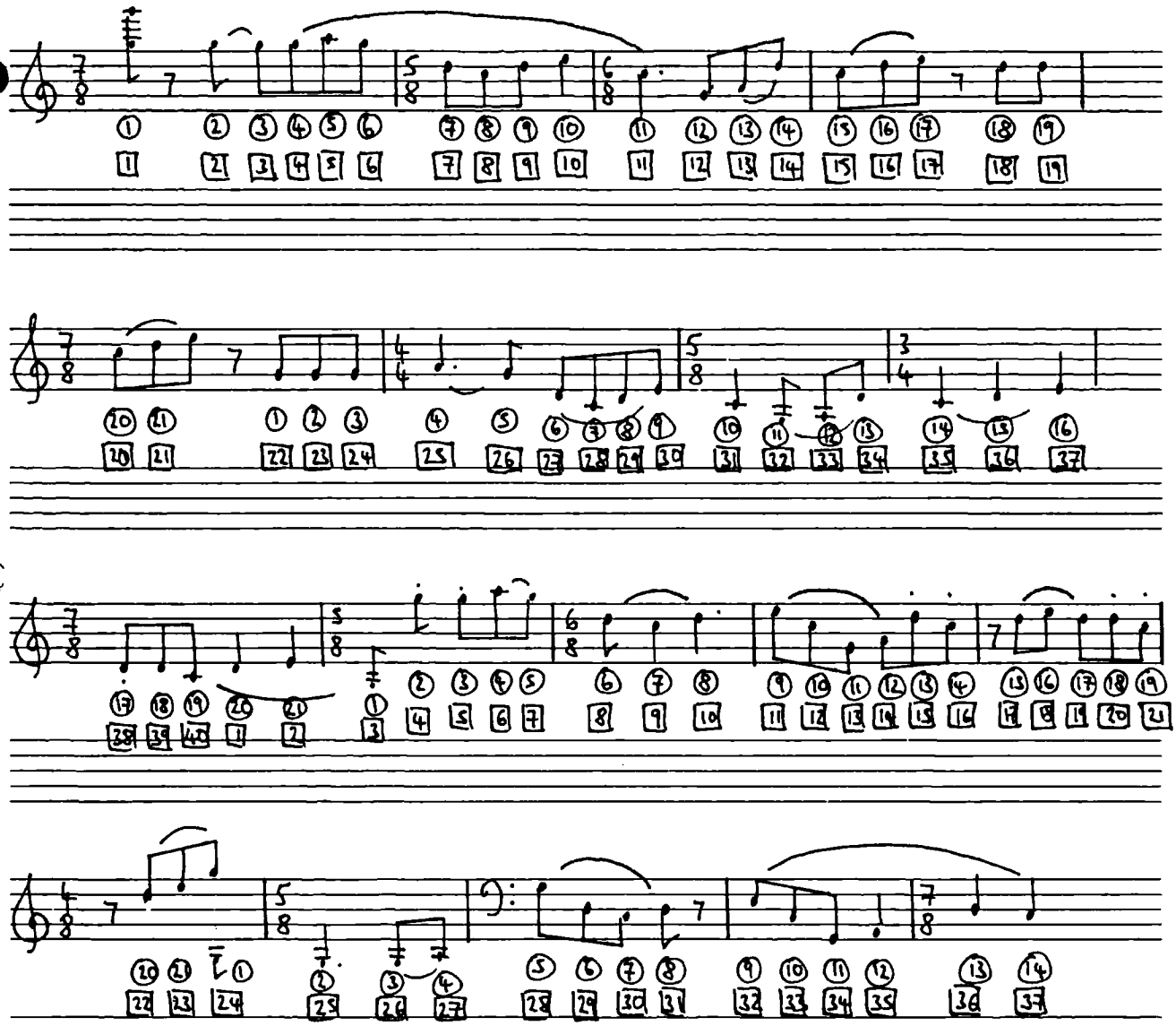
(c) II /290 - 294



PAN-A4 12 STAVE

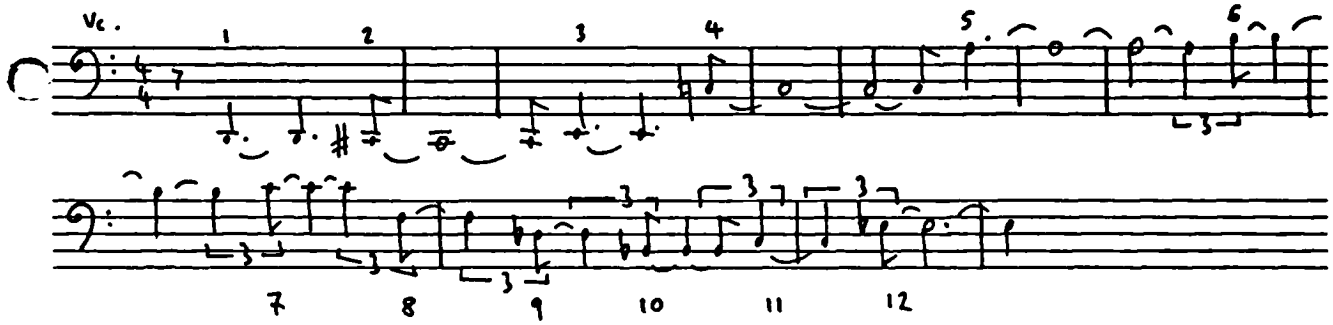
Ex. 7.18 Piano Sonata, II, 169-89



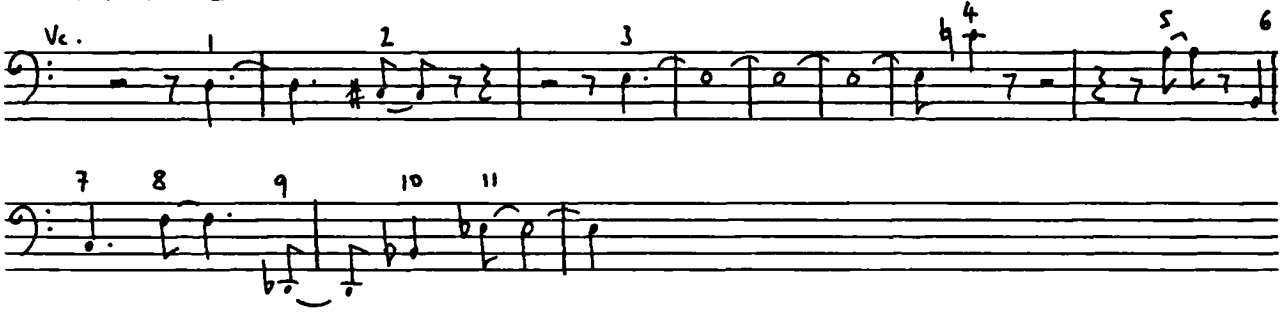


PAN-A4 12 STAVE

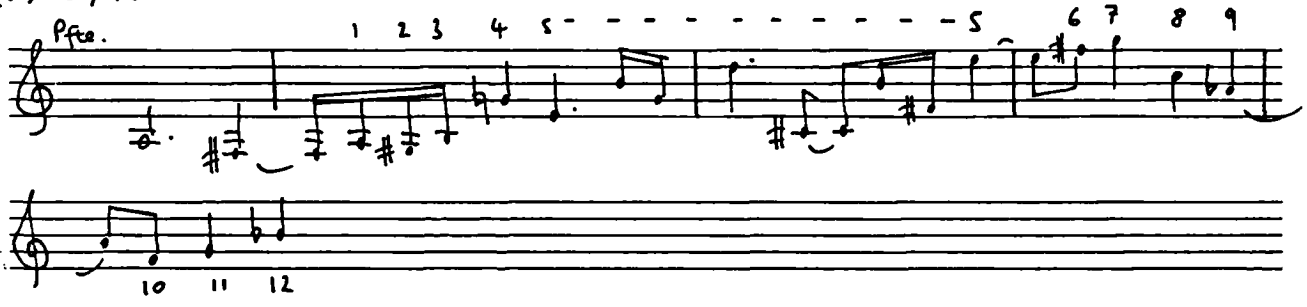
Ex. 7.10 (a) Cello Sonata / I / 6 - 16



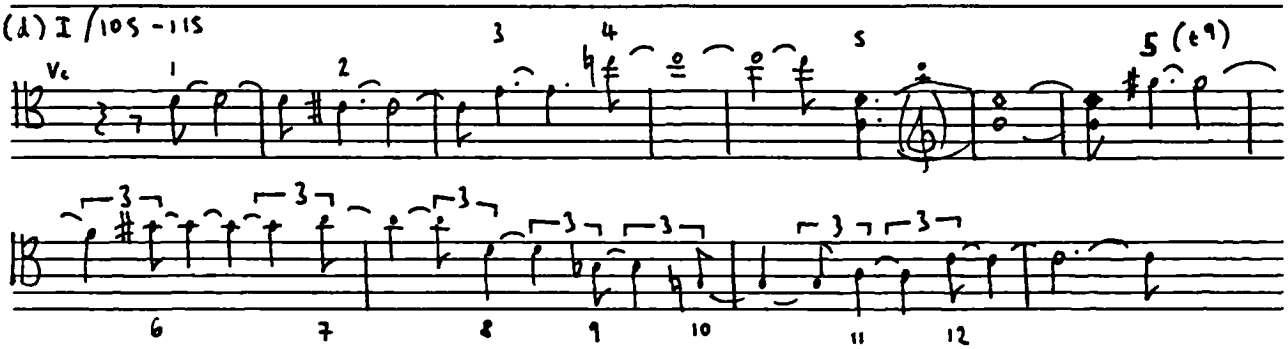
(b) I / 22 - 32



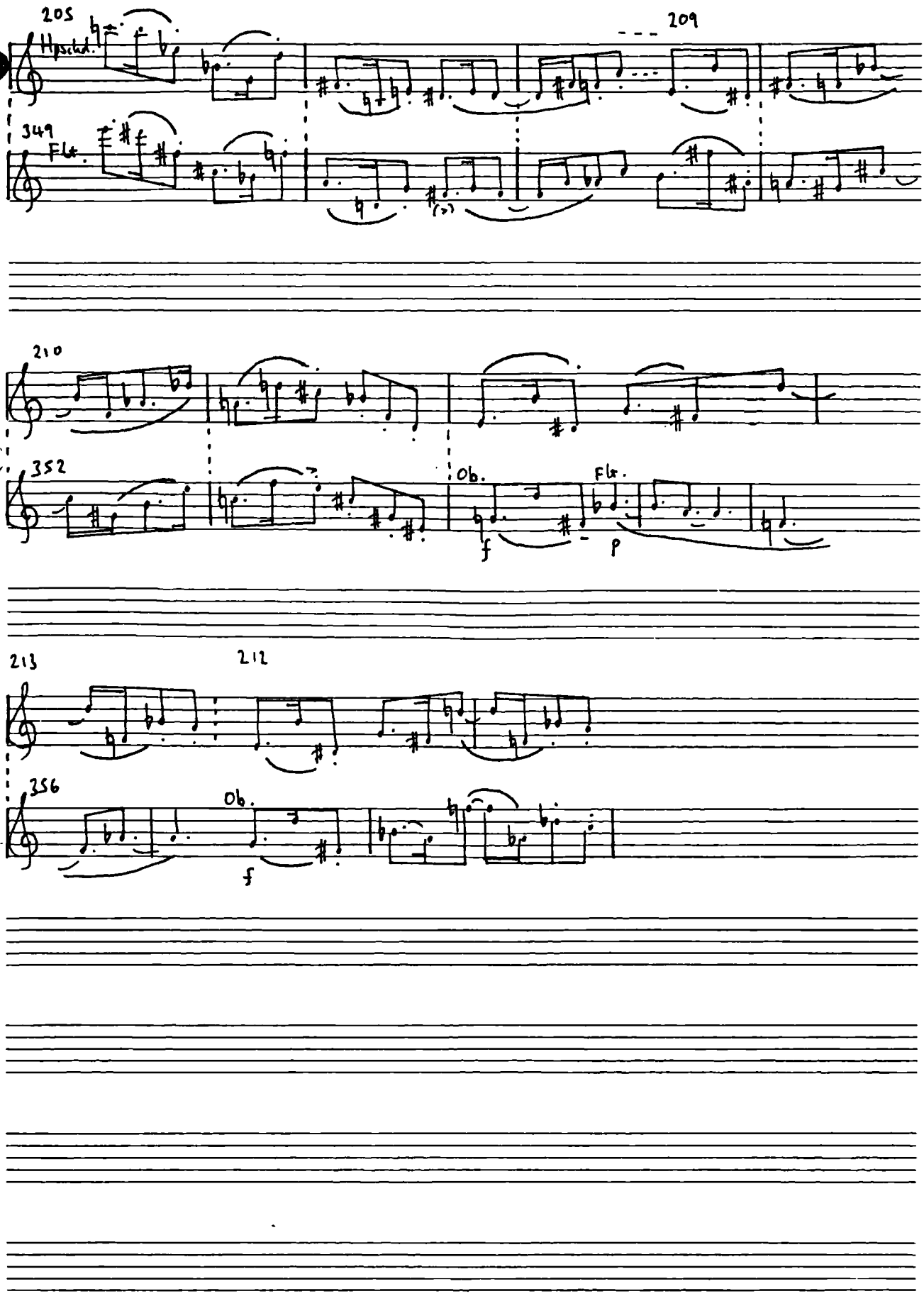
(c) I / 78 - 82



(d) I / 105 - 115

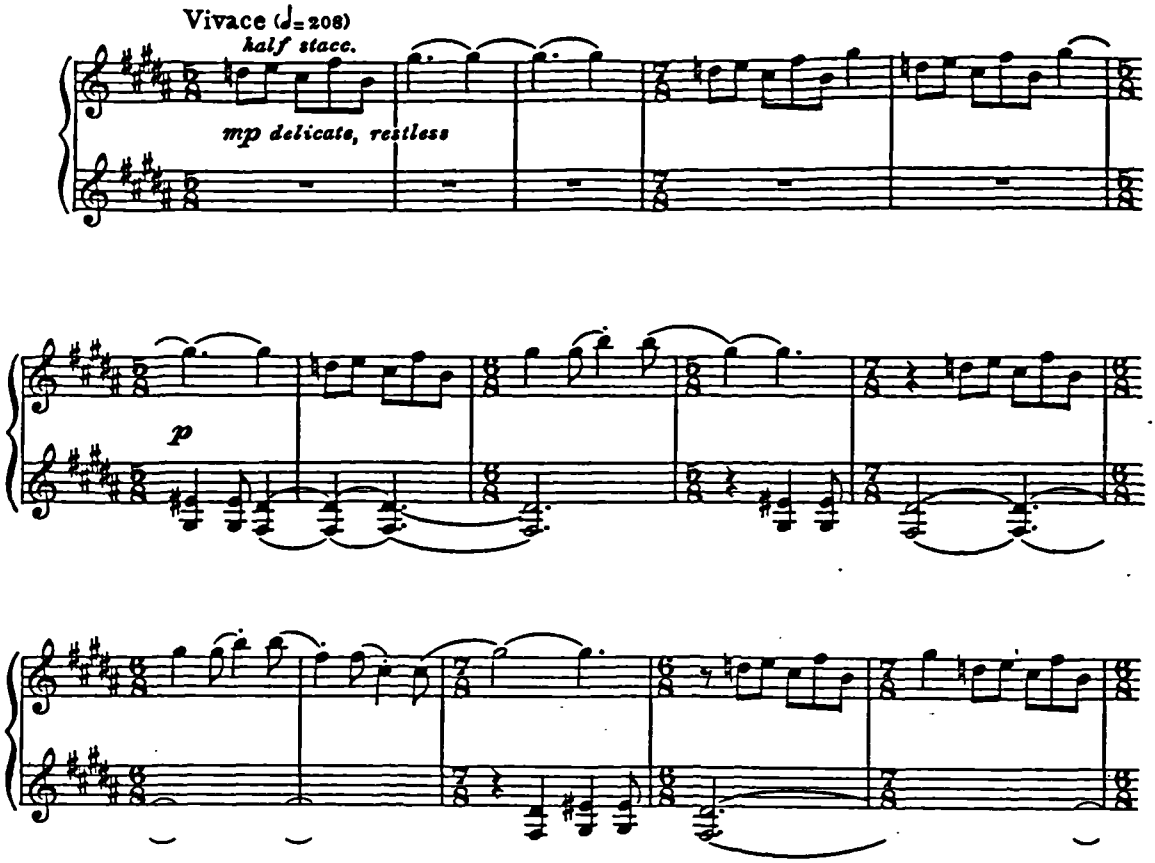


PAN-A4 12 STAVE

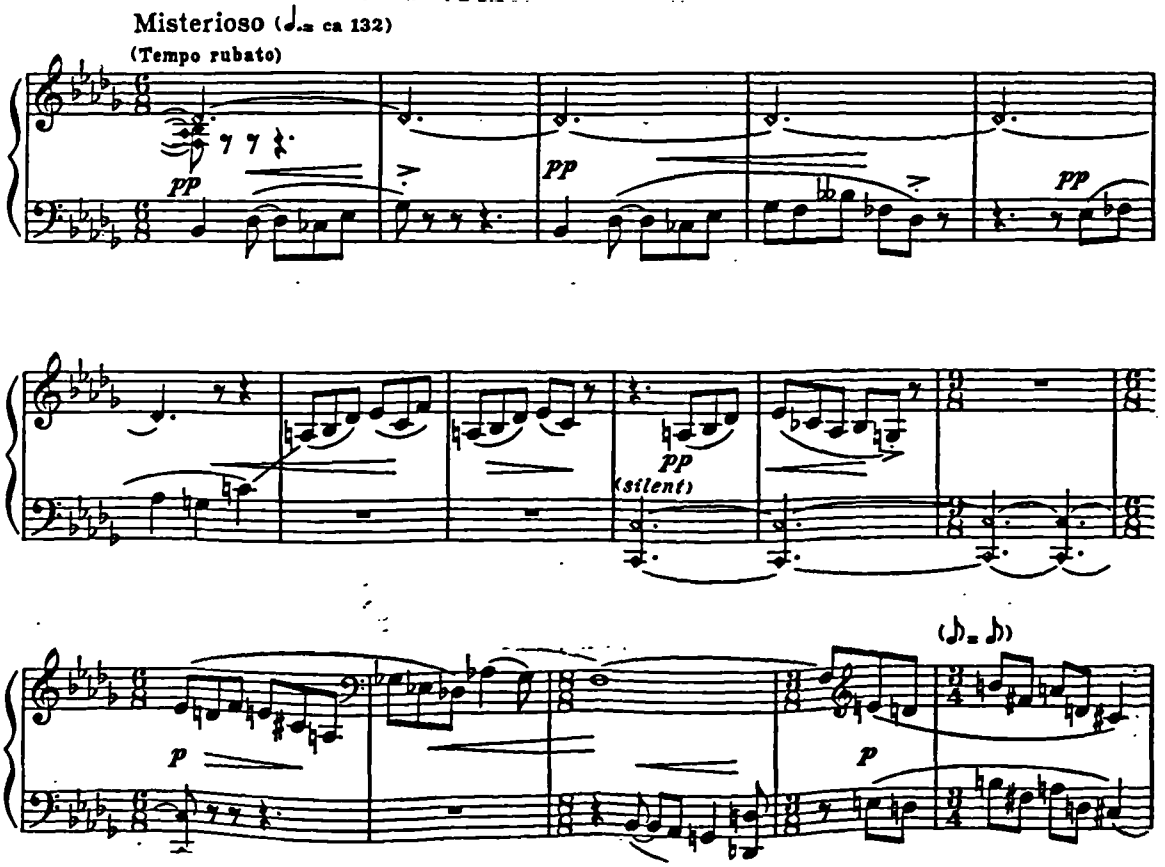


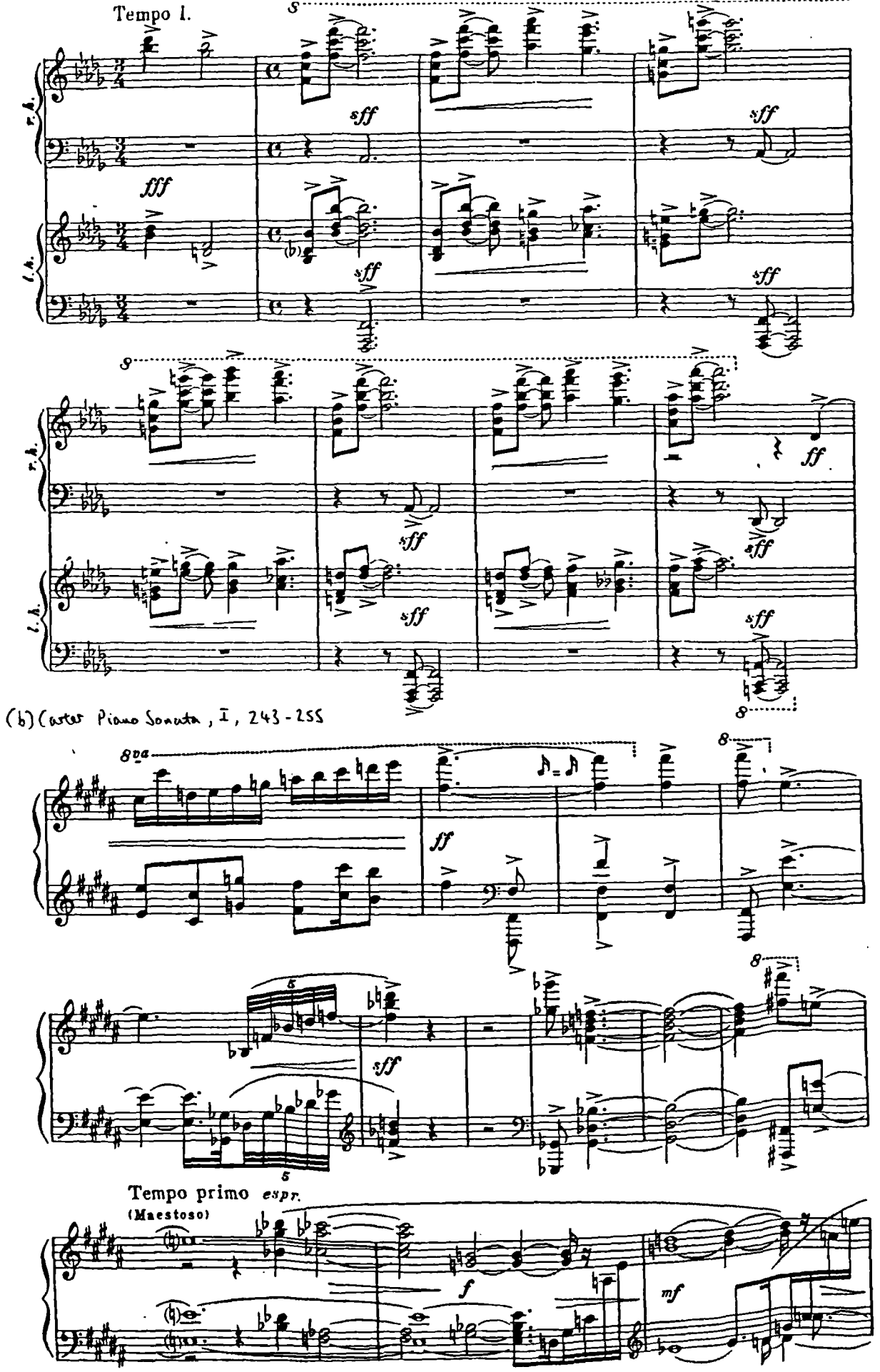
PAN-A4 12 STAVE

Ex. 8.1 (a) Copland Piano Sonata, II, 1–15

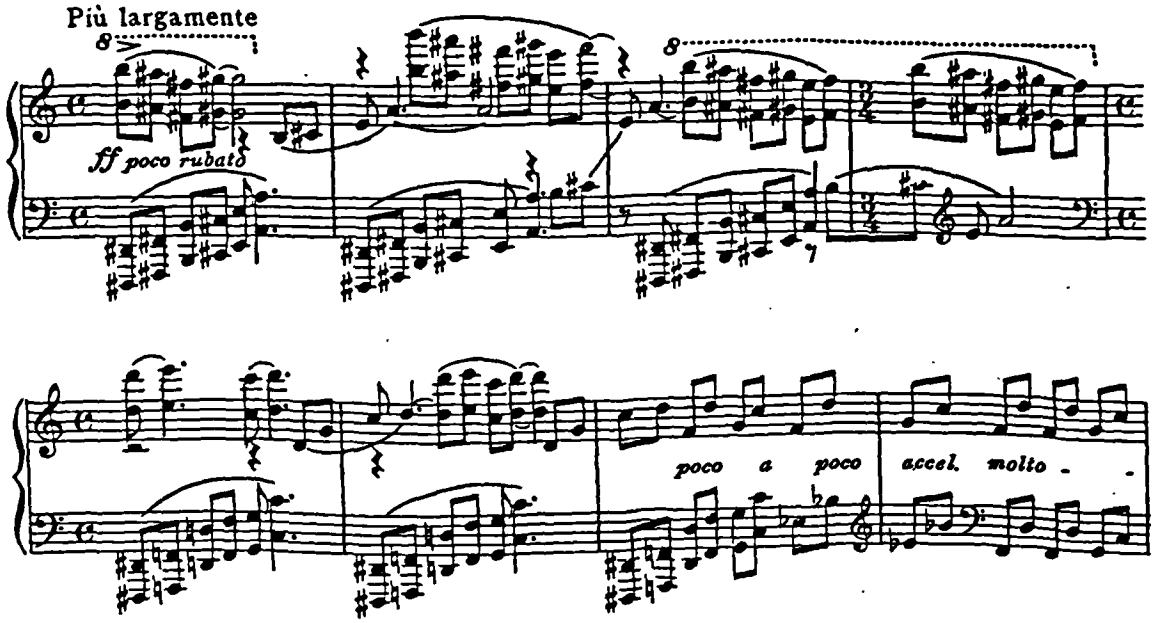


(b) Carter Piano Sonata, II, 76–91

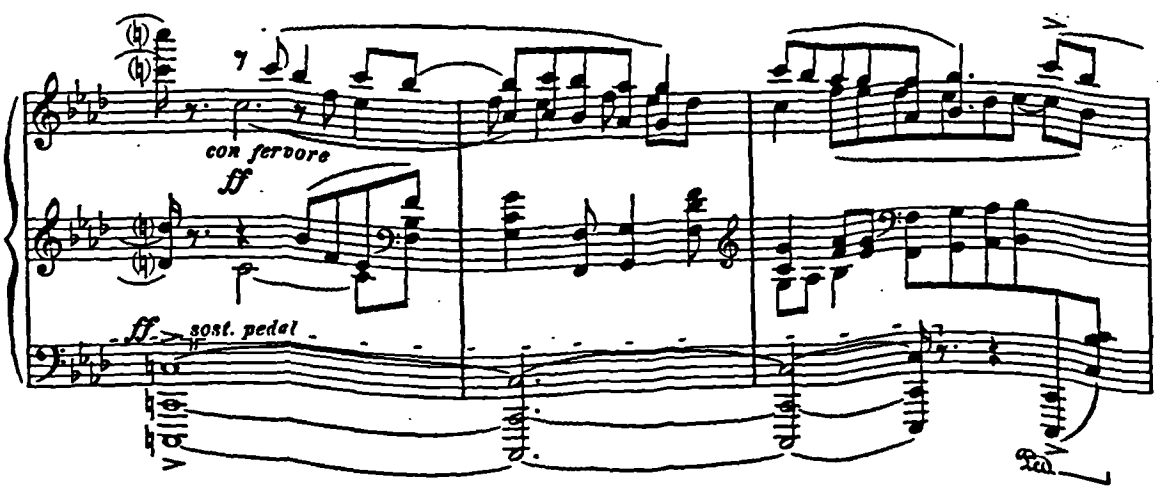



Tempo I.
r.h.
l.h.
fff
sff
ff
(b) (cuter Piano Sonata, I, 243-255
8va
Tempo primo espr.
(Maestoso)
f
mf

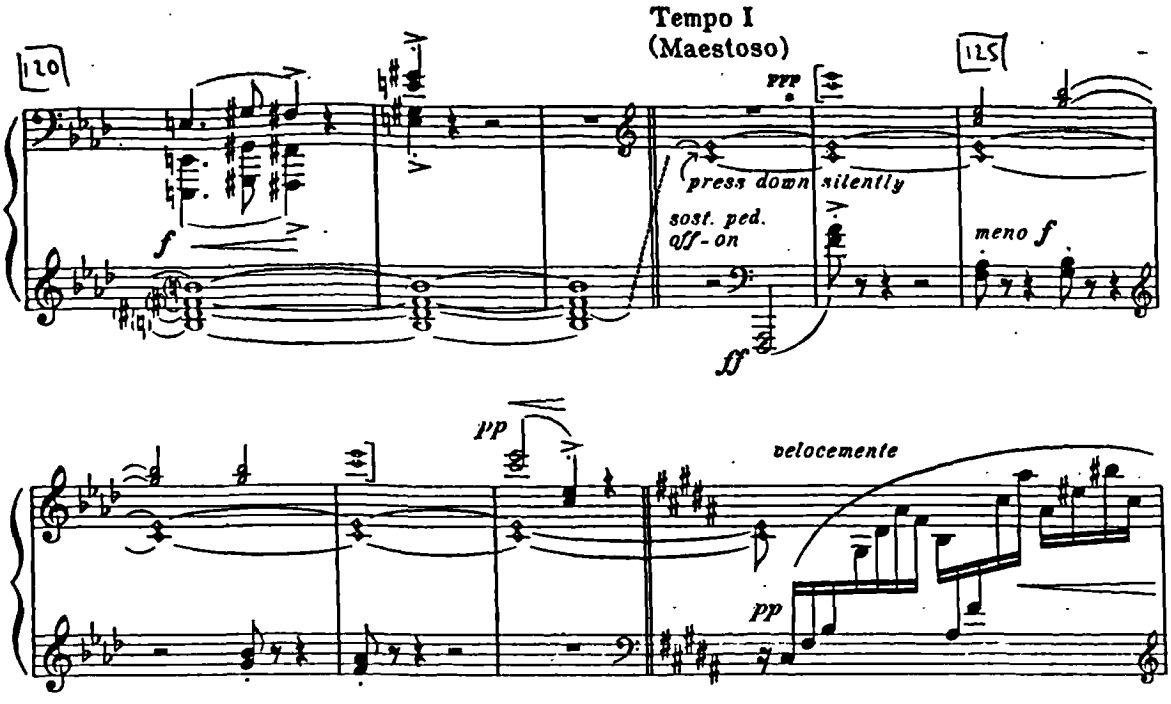
Ex. 8.3 (a) Copland Piano Sonata, I, 123-130



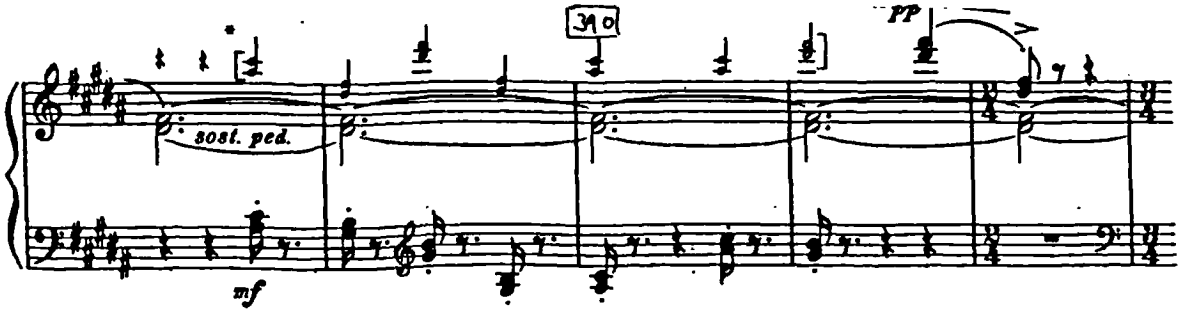
(b) Carter Piano Sonata, I, 102-104



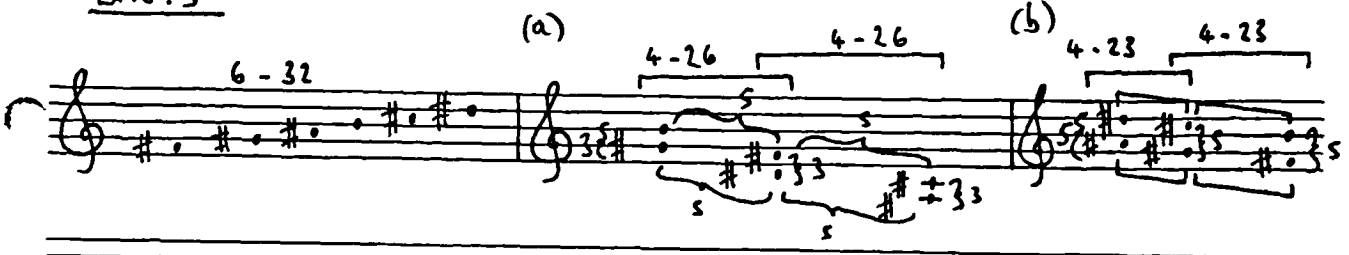
Ex. 8.4 (a) Piano Sonata, I, 123-128



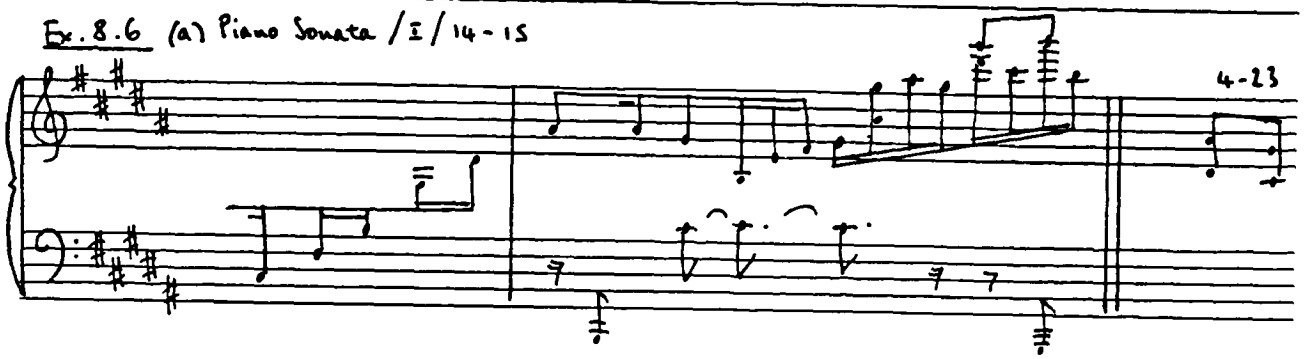
(b) Piano Sonata, II, 388 - 392



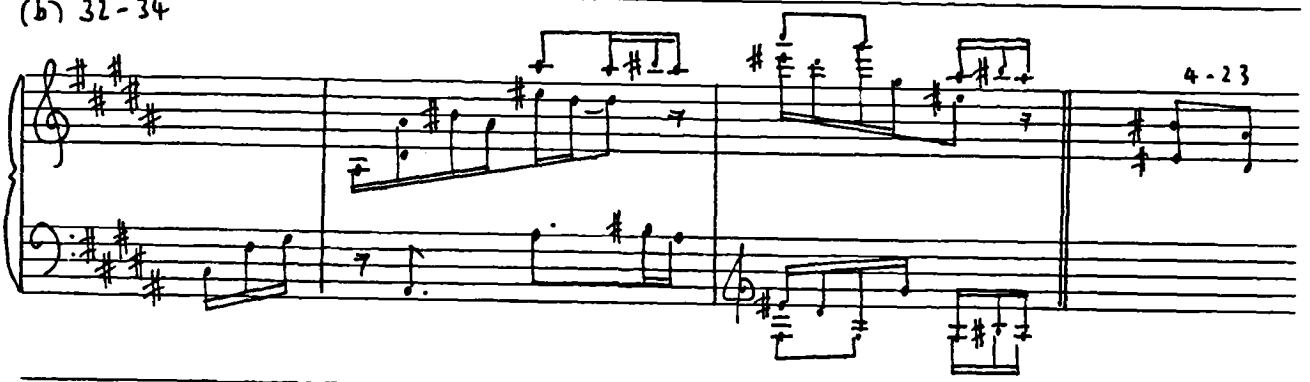
Ex.8.5



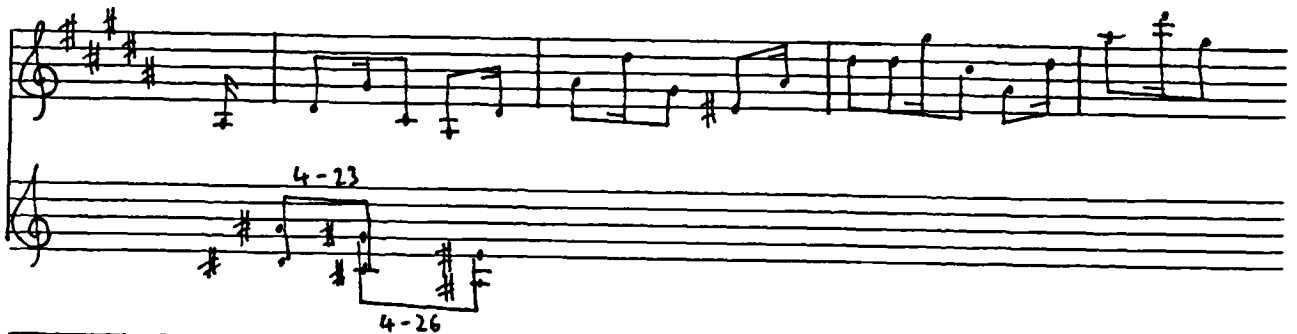
Ex.8.6 (a) Piano Sonata / I / 14-15



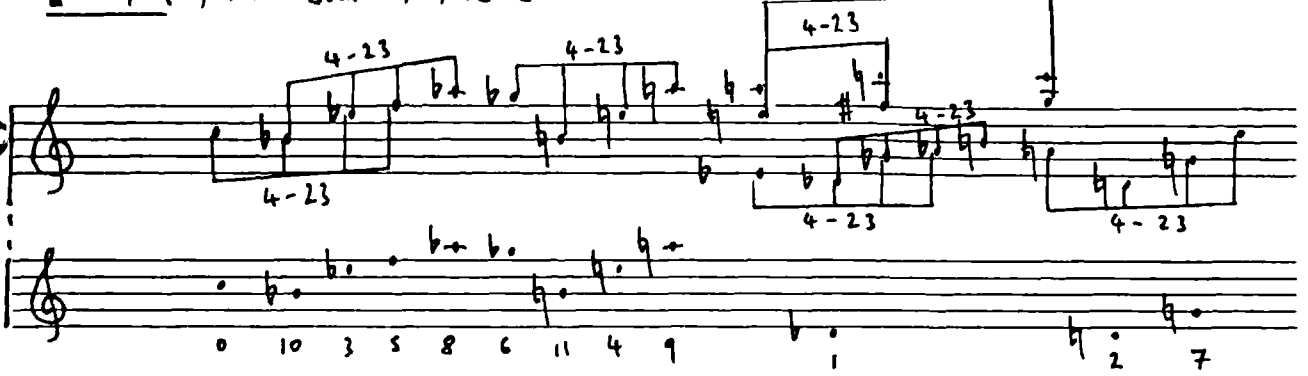
(b) 32-34



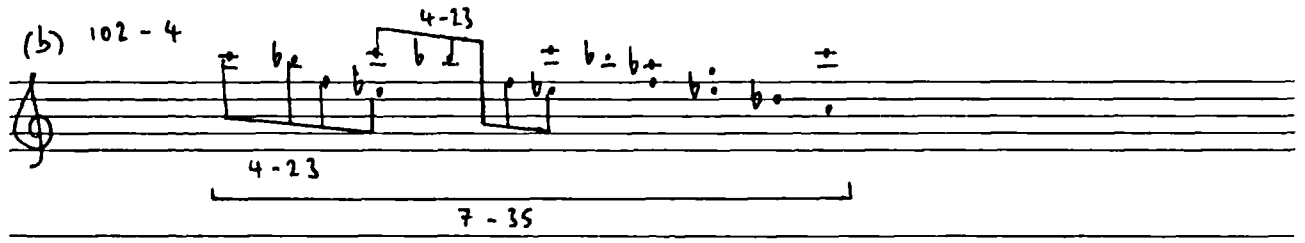
(c) 35-39



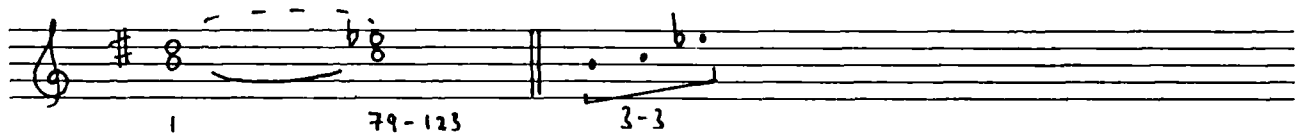
PAN-A4 12 STAVE



(b) 102 - 4

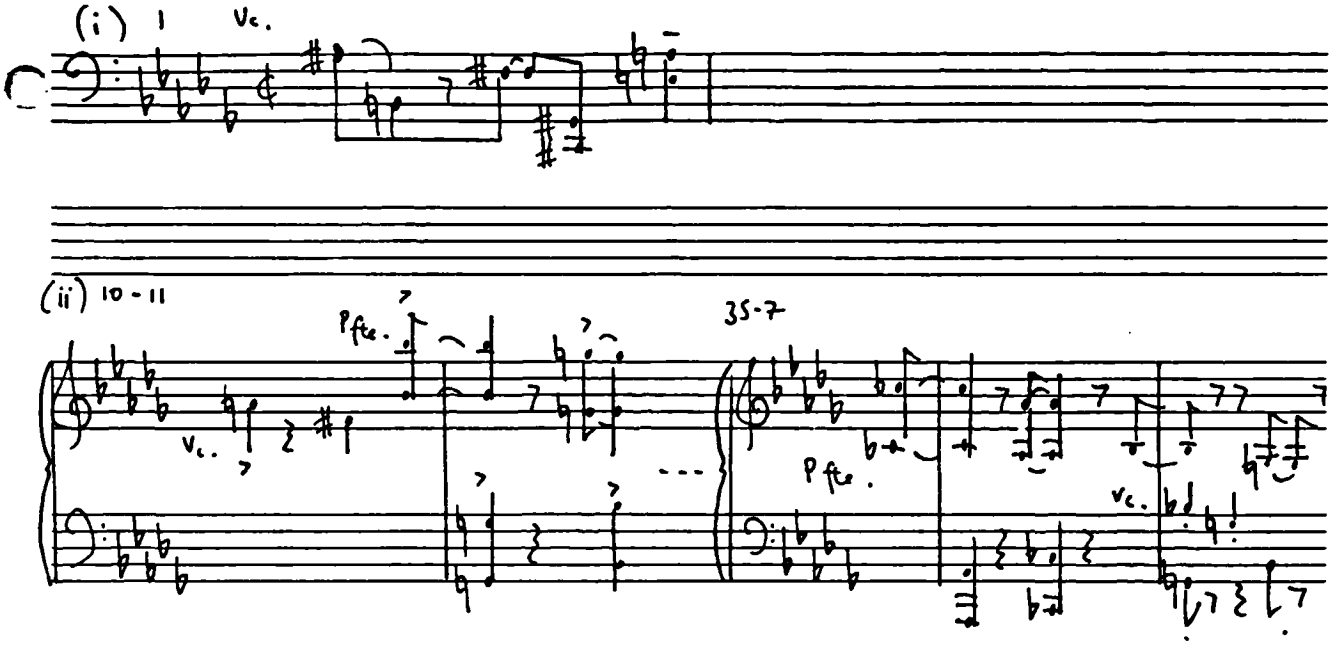


Ex. 8.8 Piano Sonata / I / 1 - 123

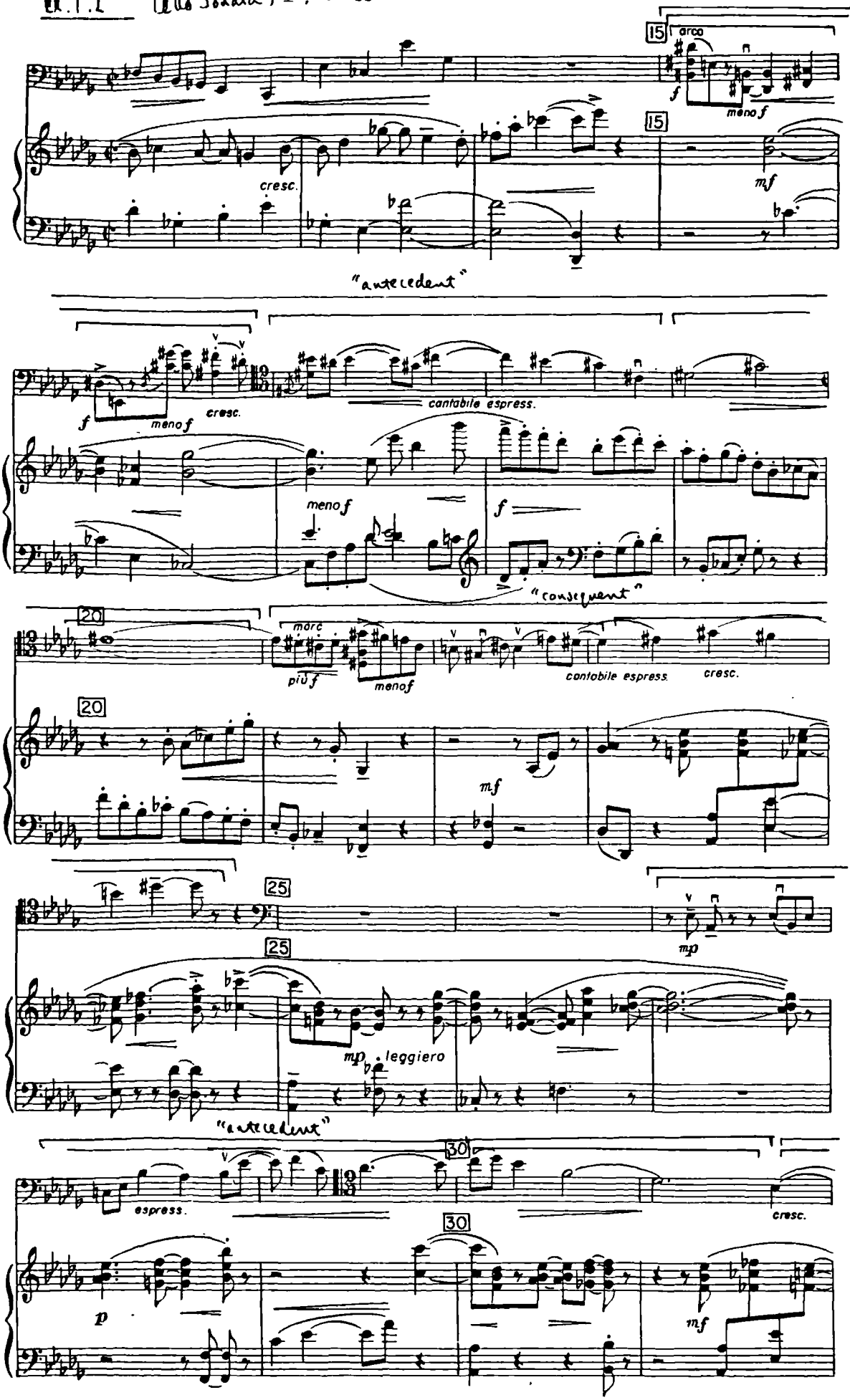


PAN-A4 12 STAVE

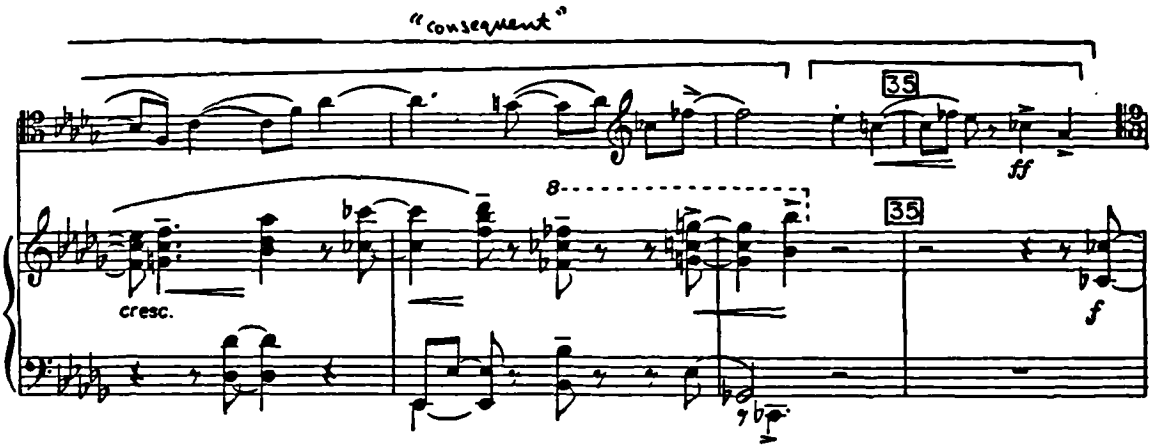
Ex. 9.1 Cello Sonata / II



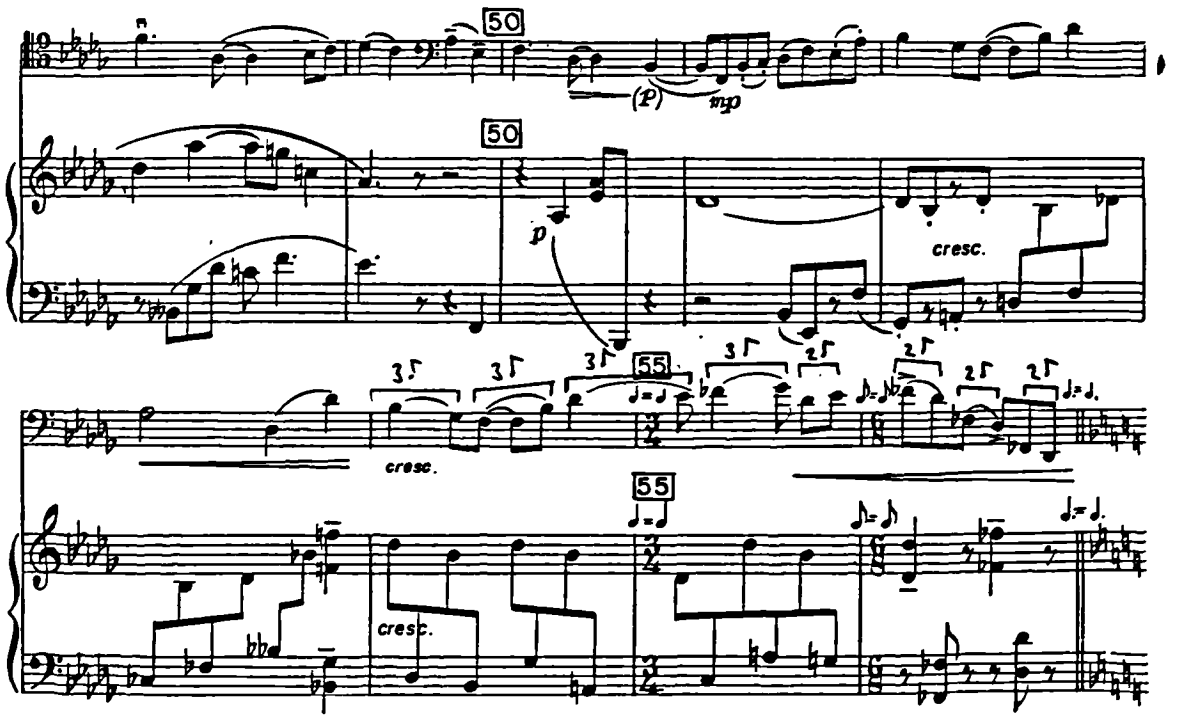
PAN-A4 12 STAVE


15
arco
f
meno f
cresc.
mf
"antecedent"
cantabile espress.
meno f
"consequent"
20
marc
più f
meno f
cantabile espress.
cresc.
25
mp
leggiero
30
espress.
p
mf

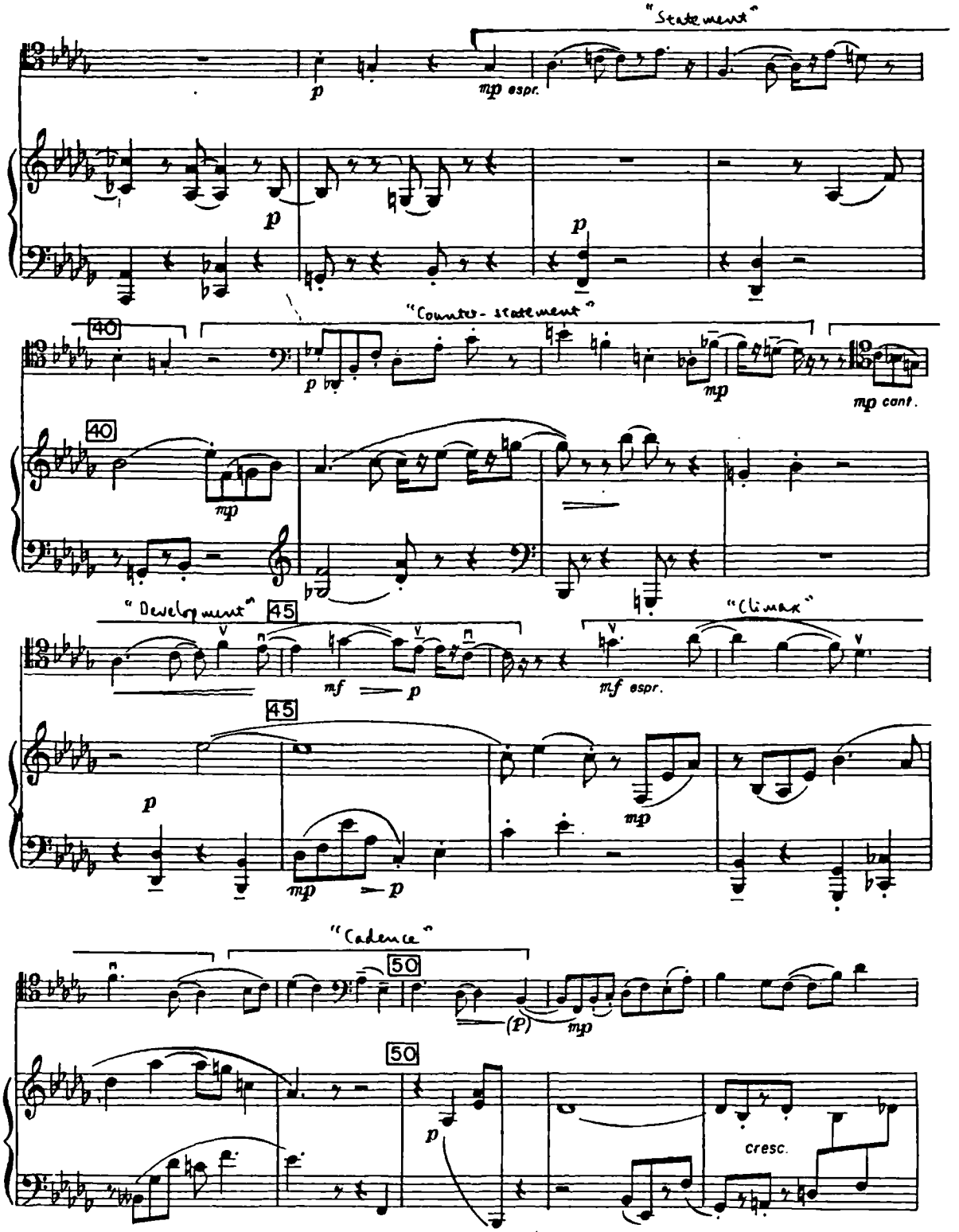
Ex. 9.2 (cont.)



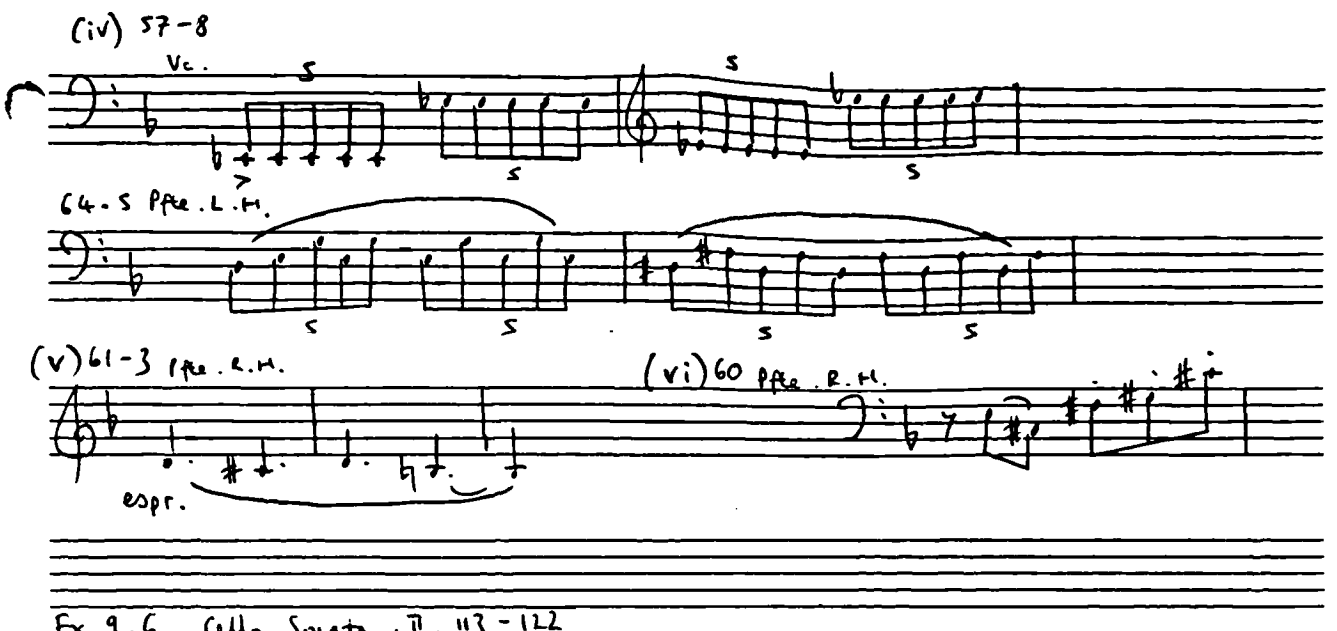
Ex. 9.4 Cello Sonata / II / s1 - 7



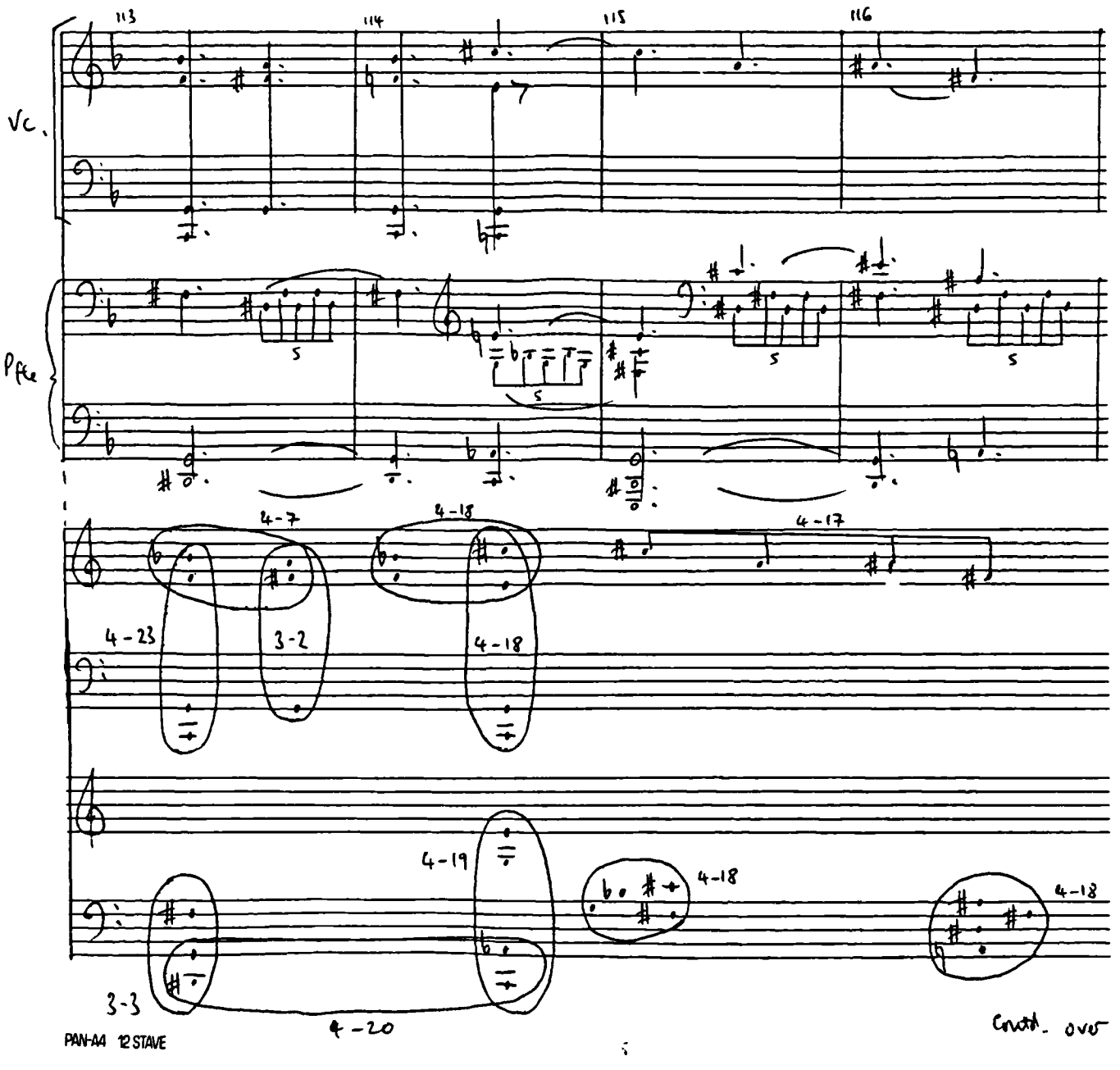
Ex. 9.3 Cello Sonata, II, 37-50



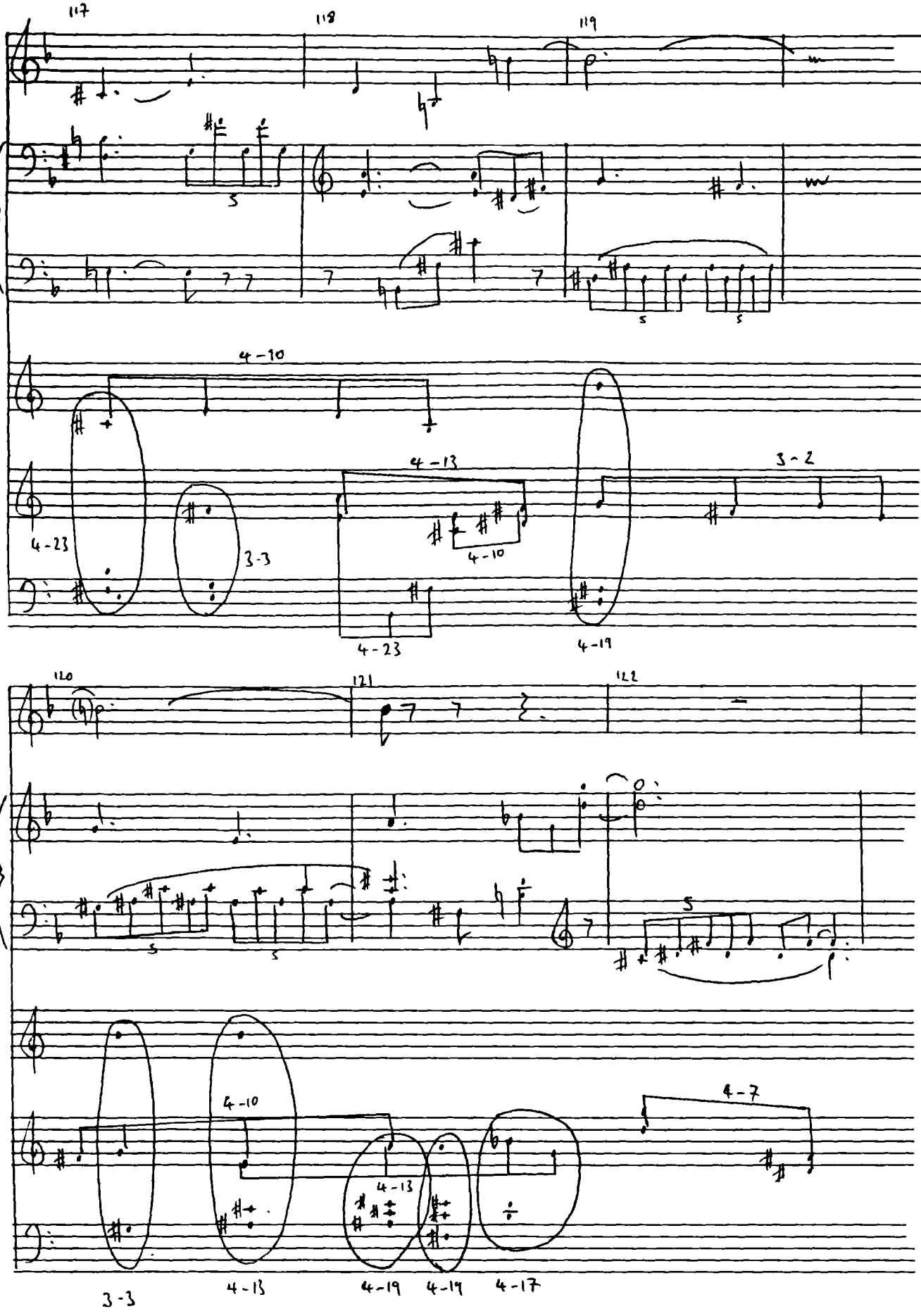
Ex. 9.5, Cello Sonata, II



Ex. 9.6, Cello Sonata, II, 113-122

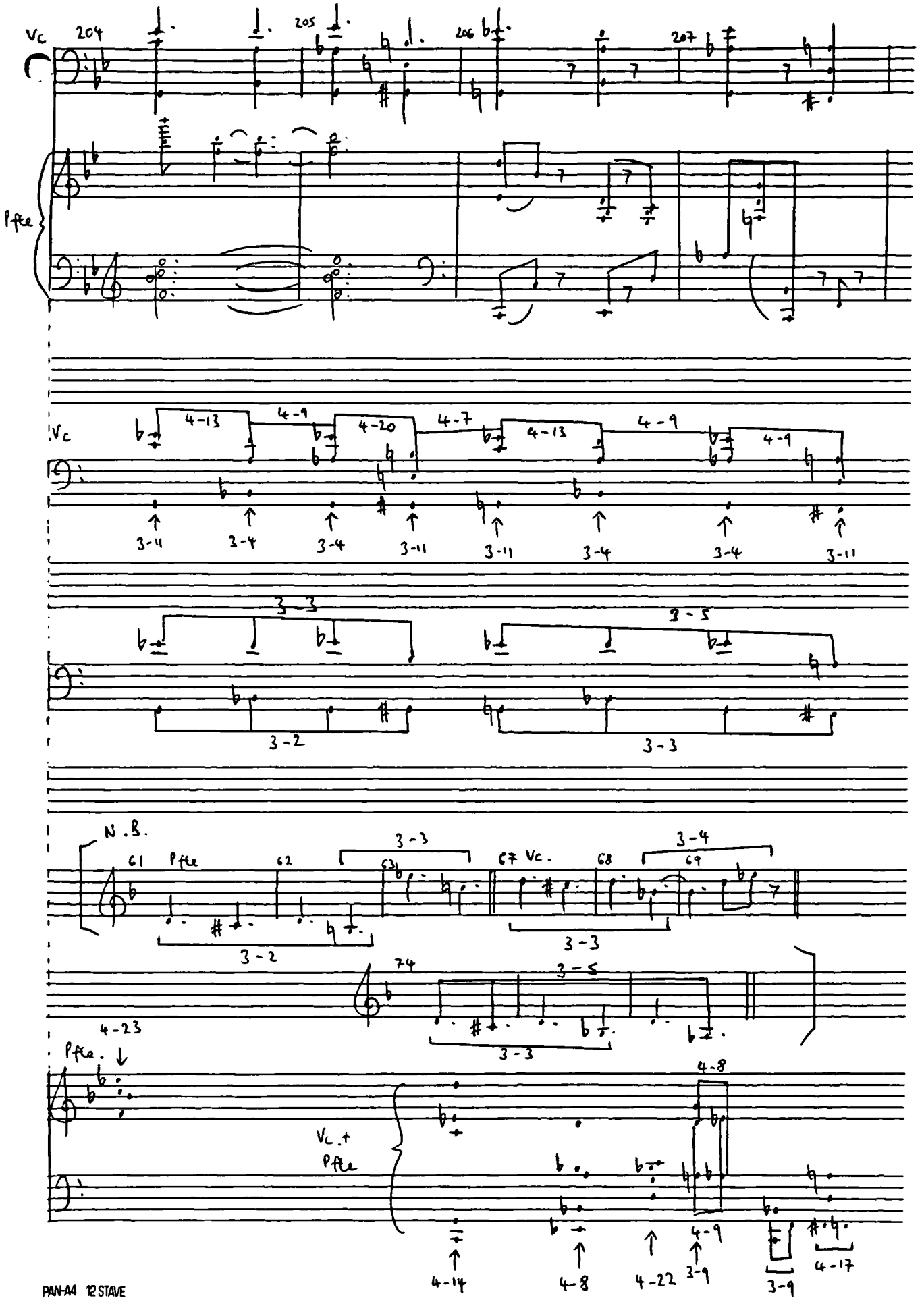


PAN-A4 12 STAVE

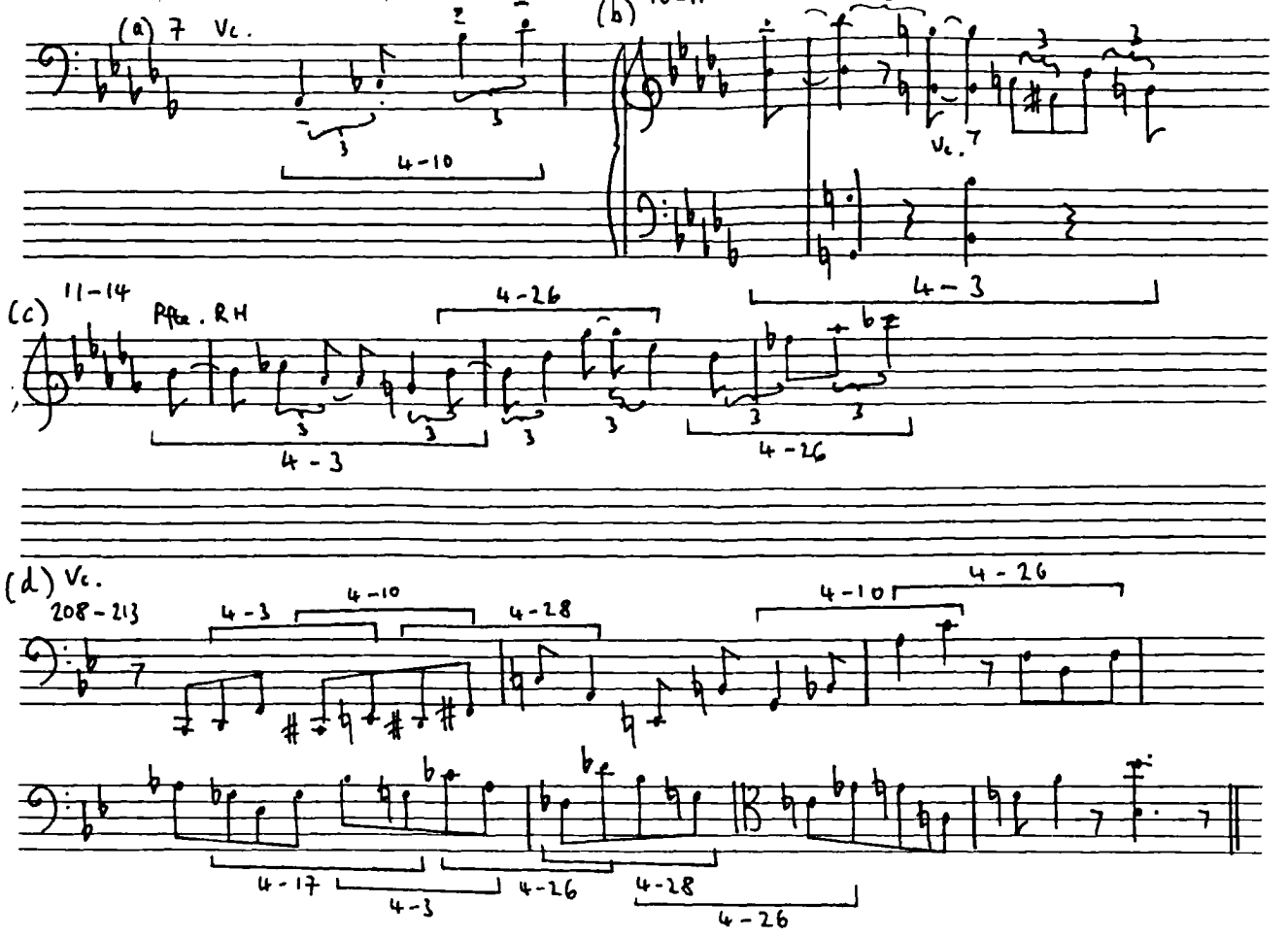


PAN-A4 12 STAVE

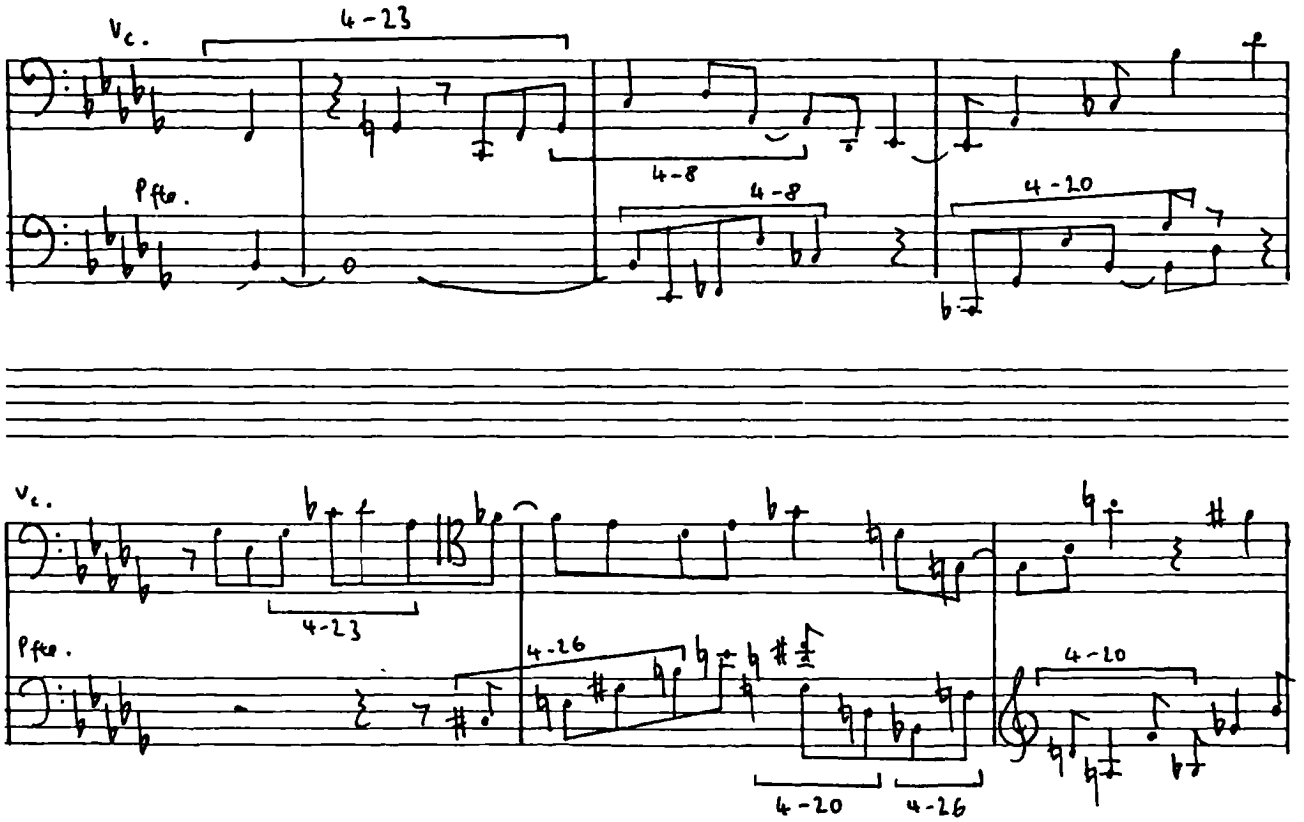
Ex. 9.7, Cello Sonata, II, 204 - 207



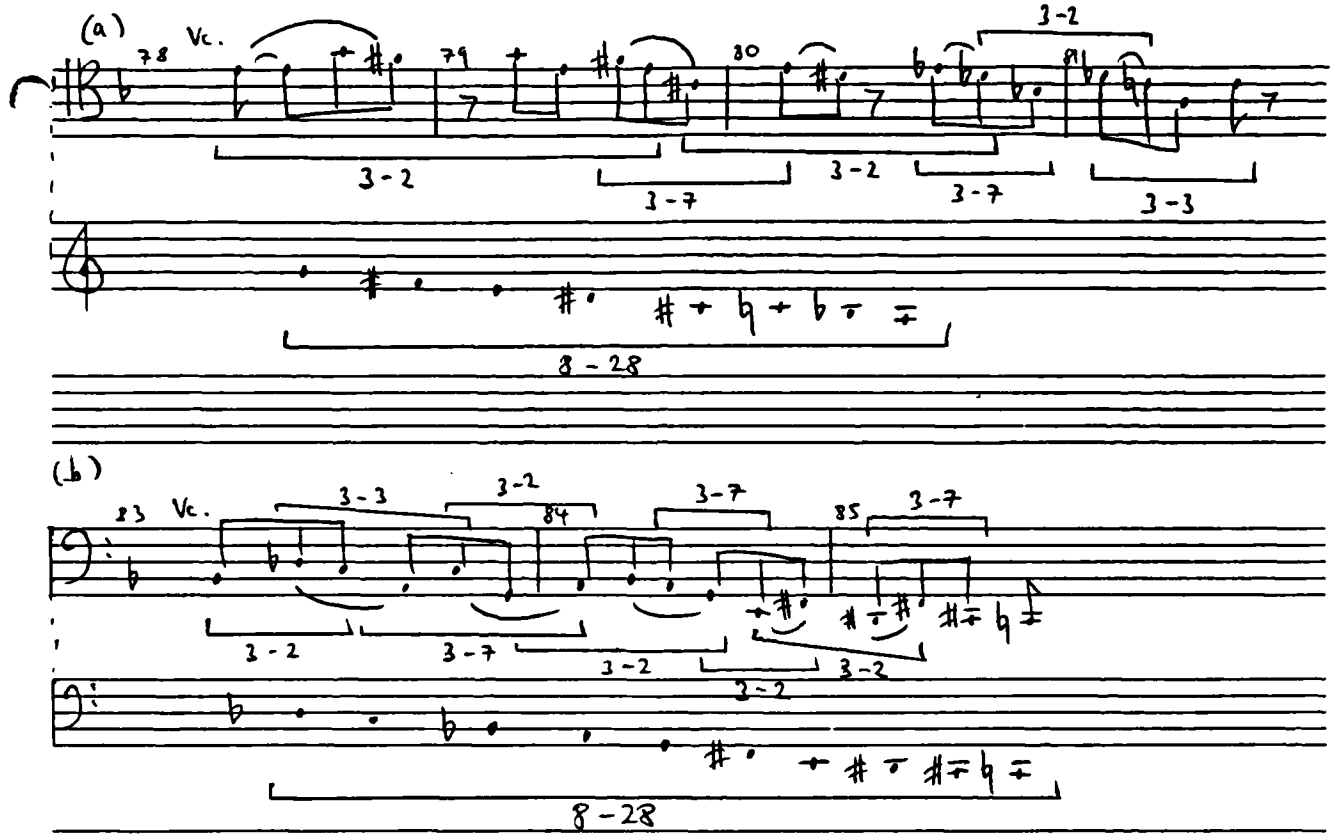
PAN-A4 12 STAVE



Ex. 9.9 Cello Sonata / II / 4-10



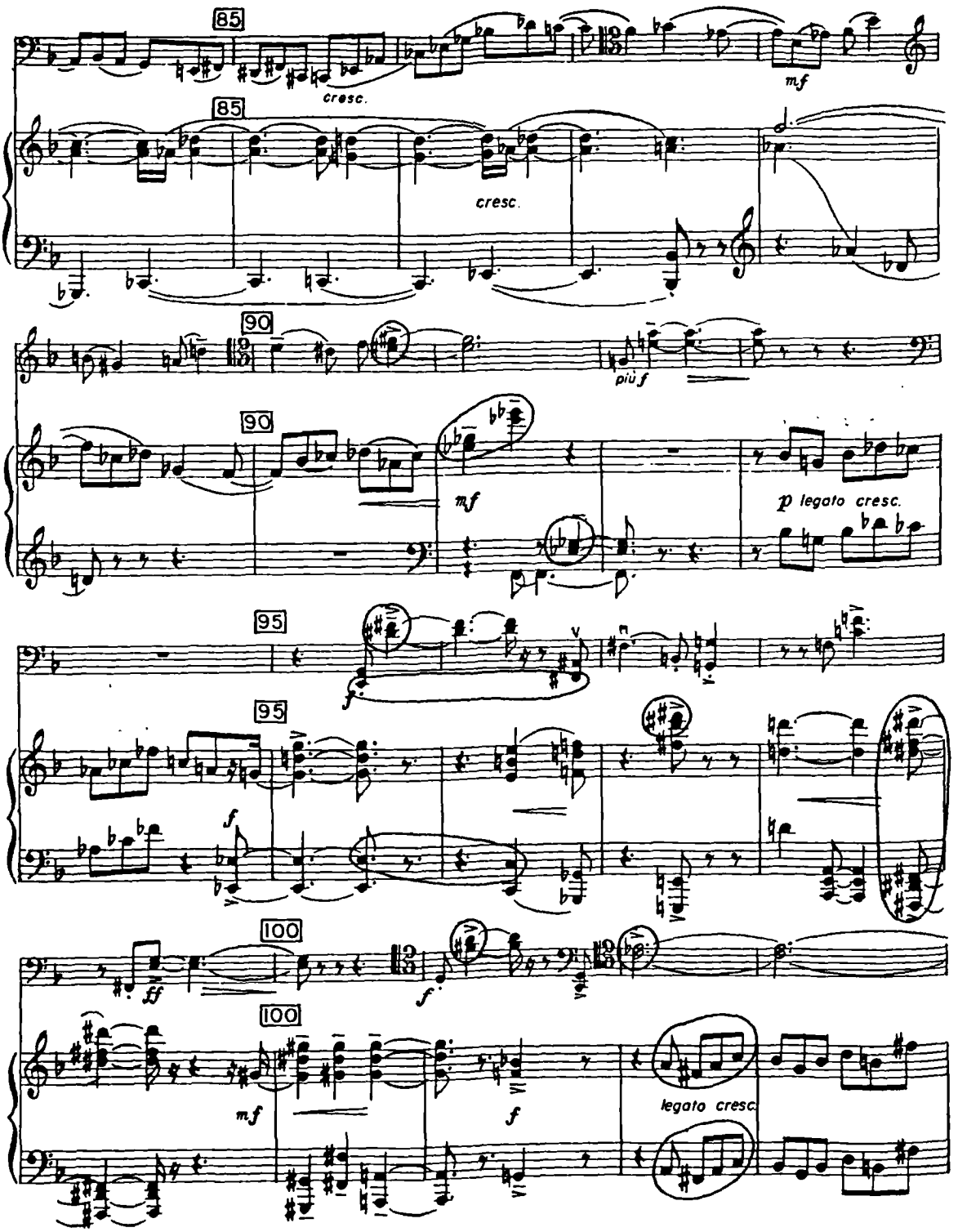
Ex. 9.10 Cello Sonata, II



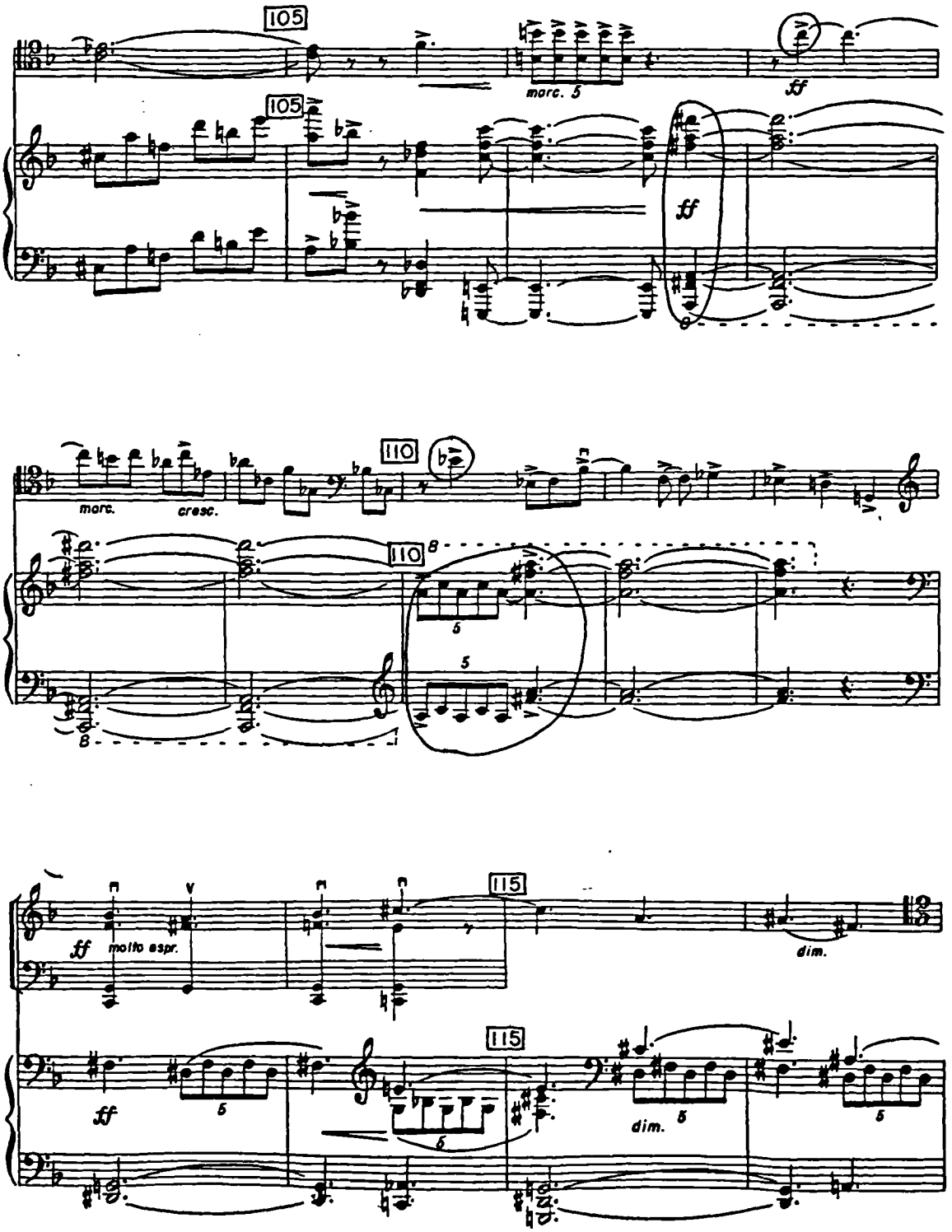
PAN-A4 12 STAVE

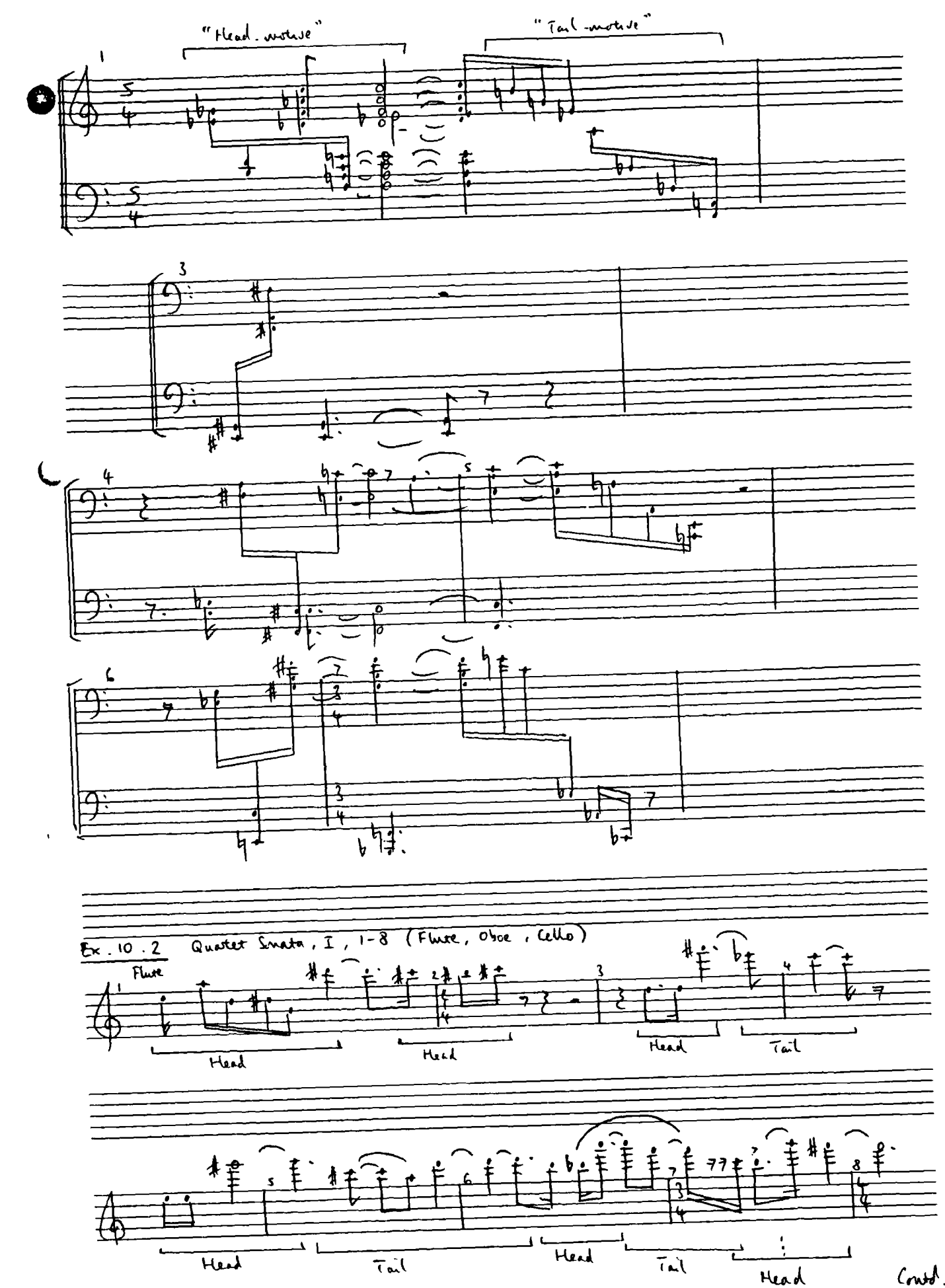
Ex. 9.11 Cello Sonata / II / 90-112

16 4-28 (0,3,6,9) Circled

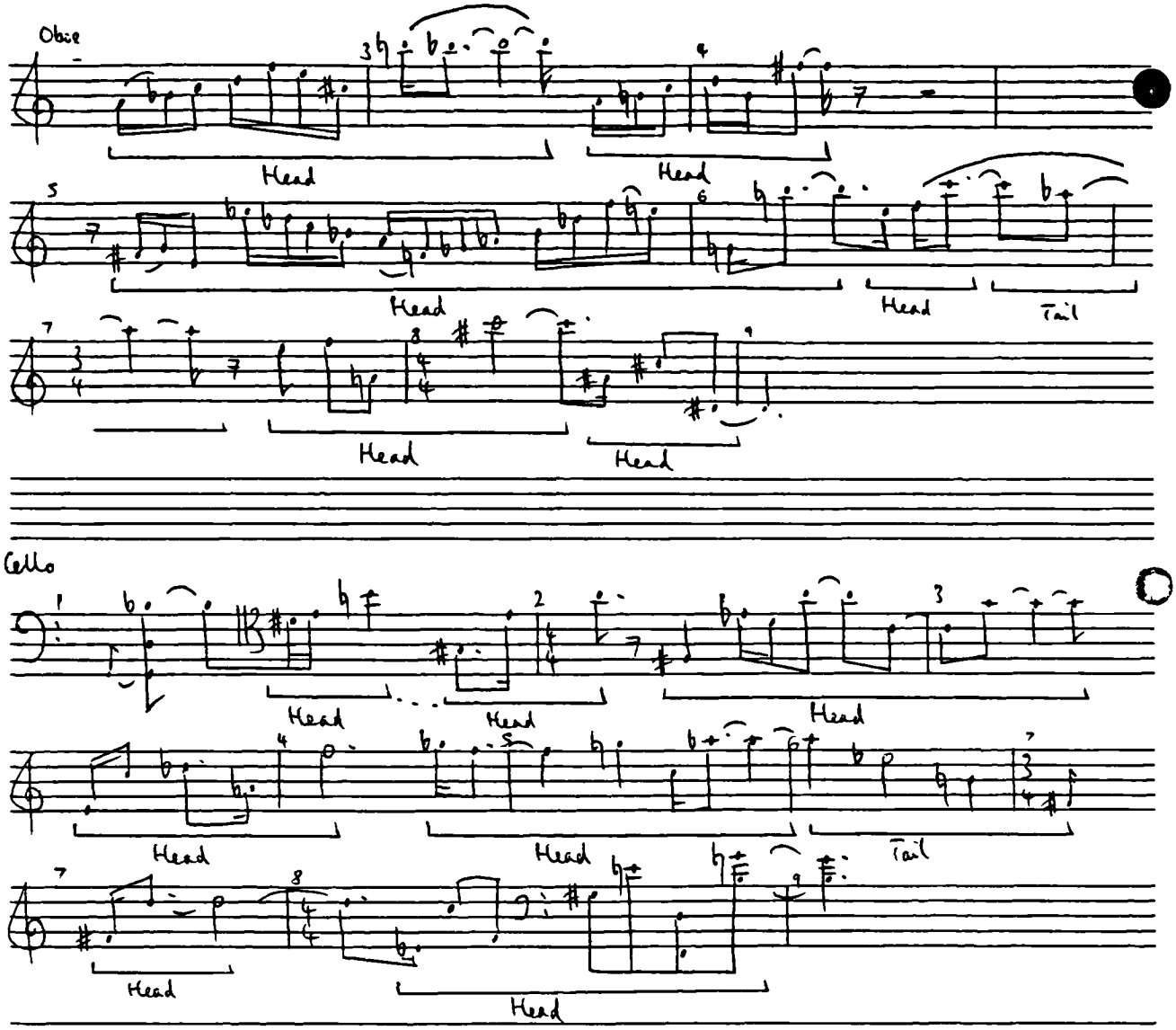


AMP-6629-47

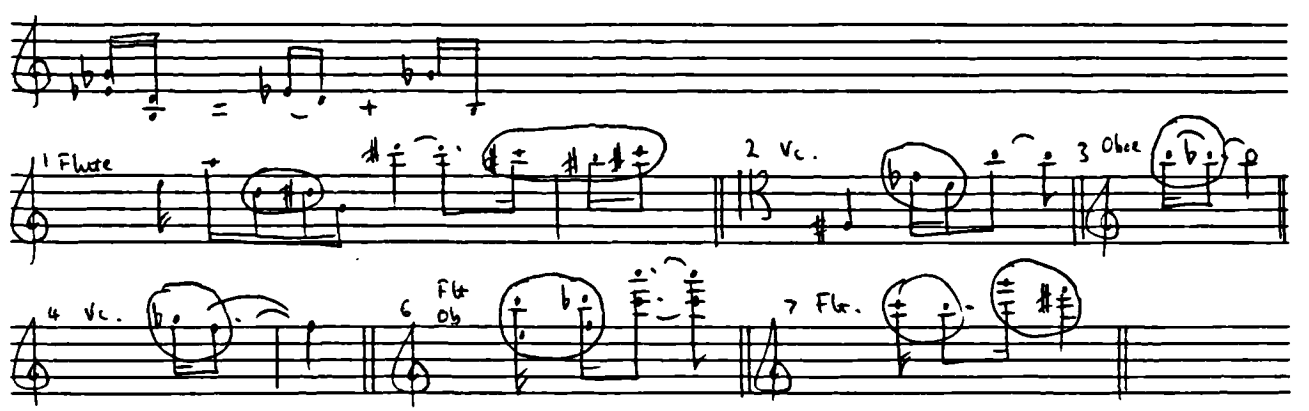

105
105
marc. 5
ff
ff
marc.
cresc.
110
110
8
5
5
8
ff
molto espr.
115
dim.
115
ff
5
5
dim.
5
5



PAN-A4 12 STAVE

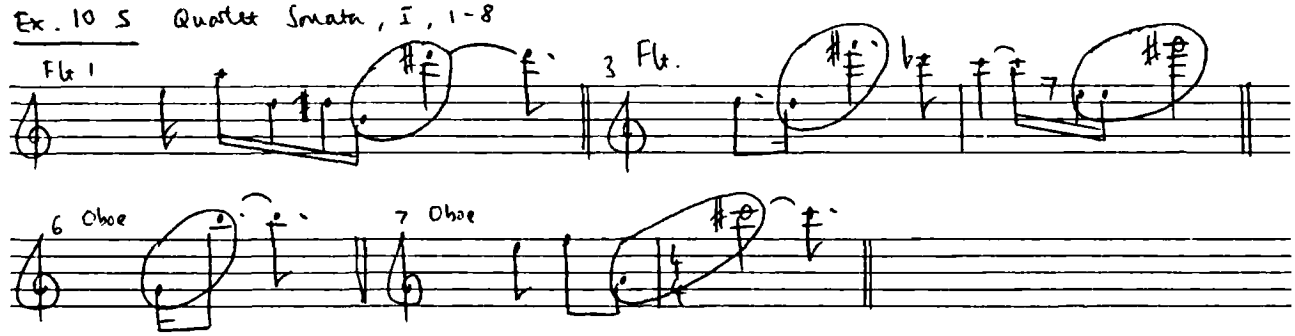


Ex. 10.3, Quartet Sonata, I, 1-8

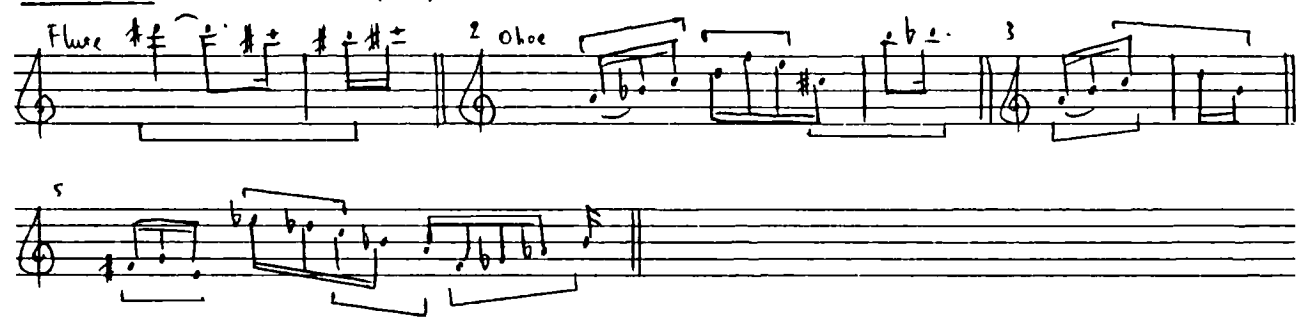


PAN-A4 12 STAVE

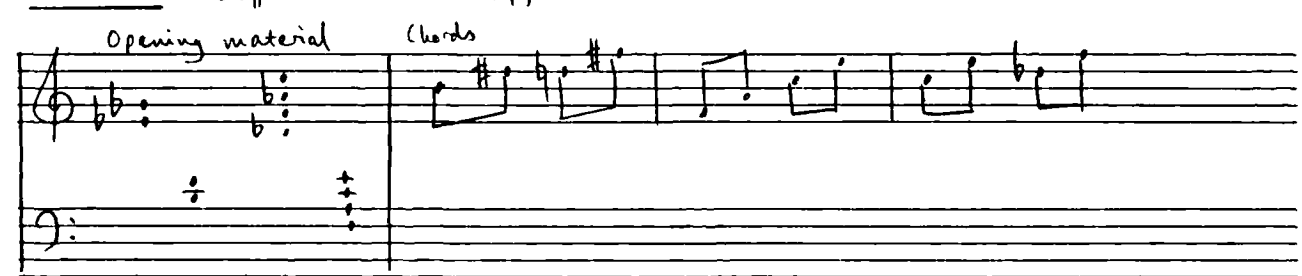
Ex. 10.5 Quartet Sonata, I, 1-8



Ex. 10.6 Quartet Sonata, I, 1-8

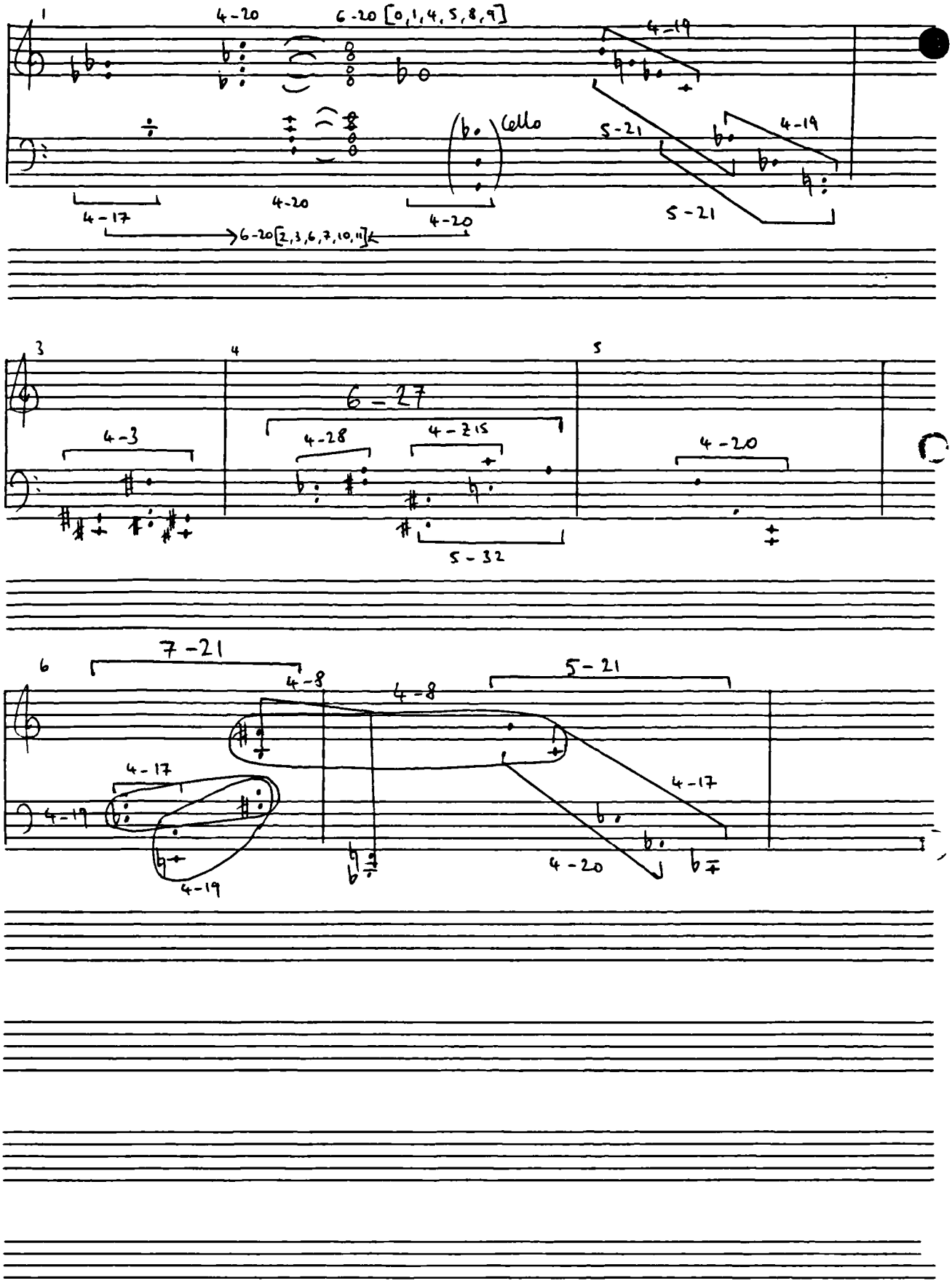


Ex. 10.7 Schiff 1983: Chart 12 (pg. 165)

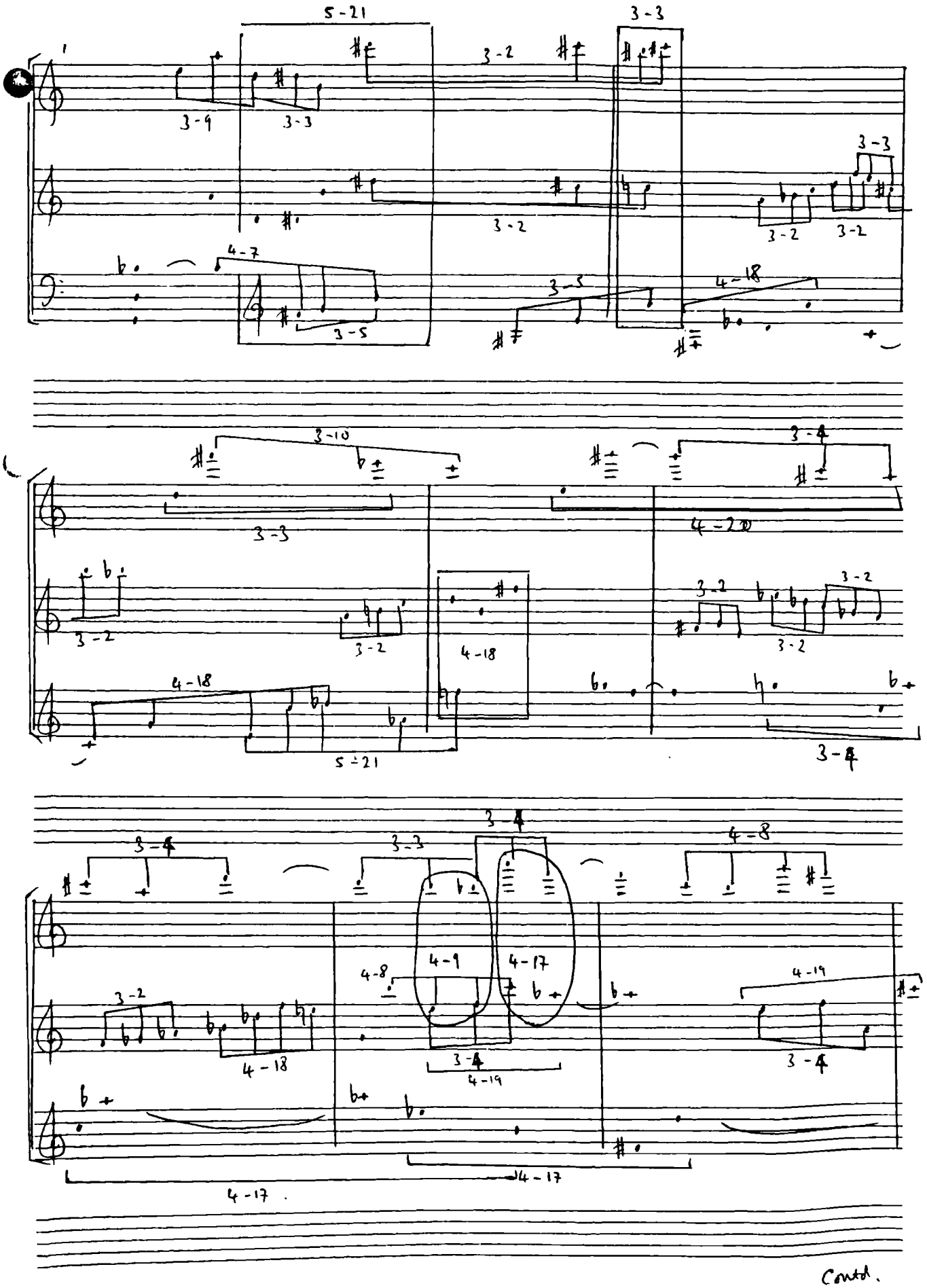


PAN A4 12 STAVE

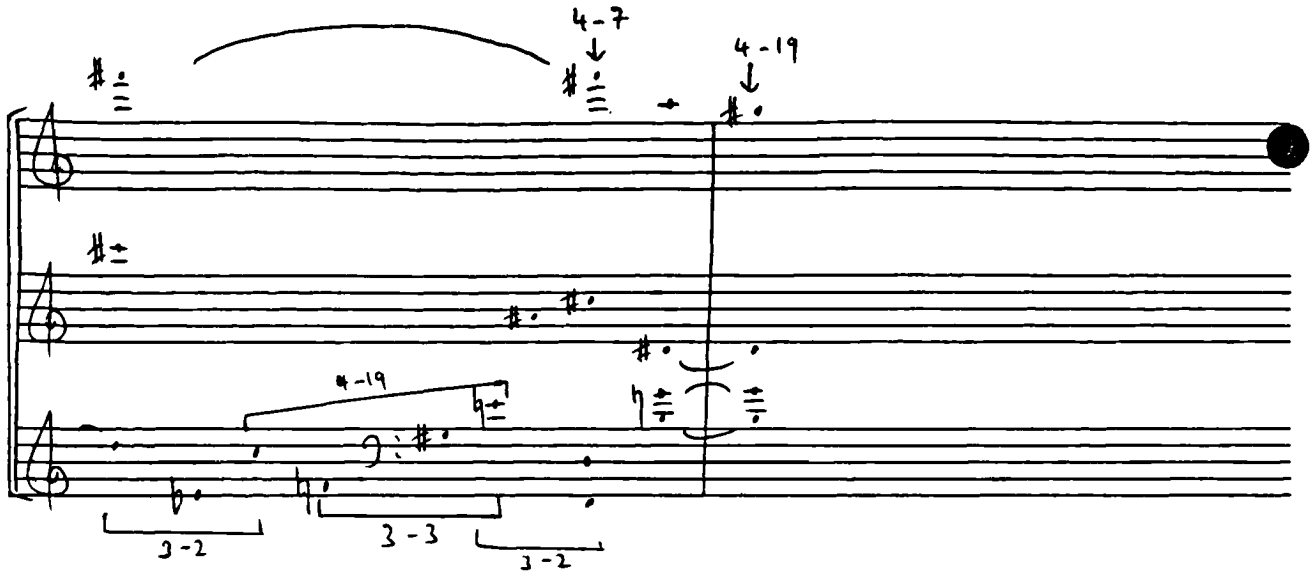
Ex. 10.8, Quartet Sonata, 1-8 (Harpsichord)

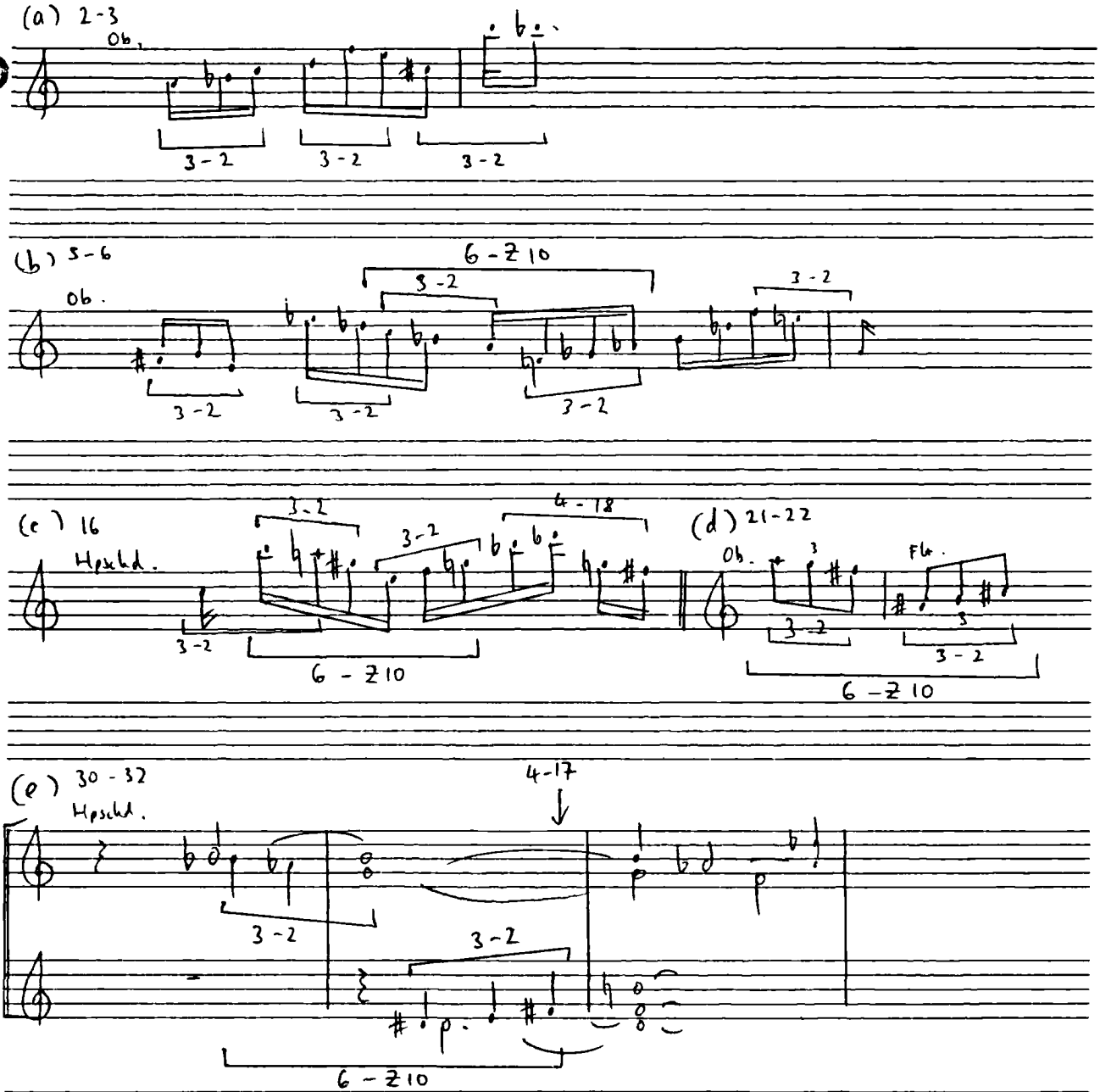


PAN-A4 12 STAVE



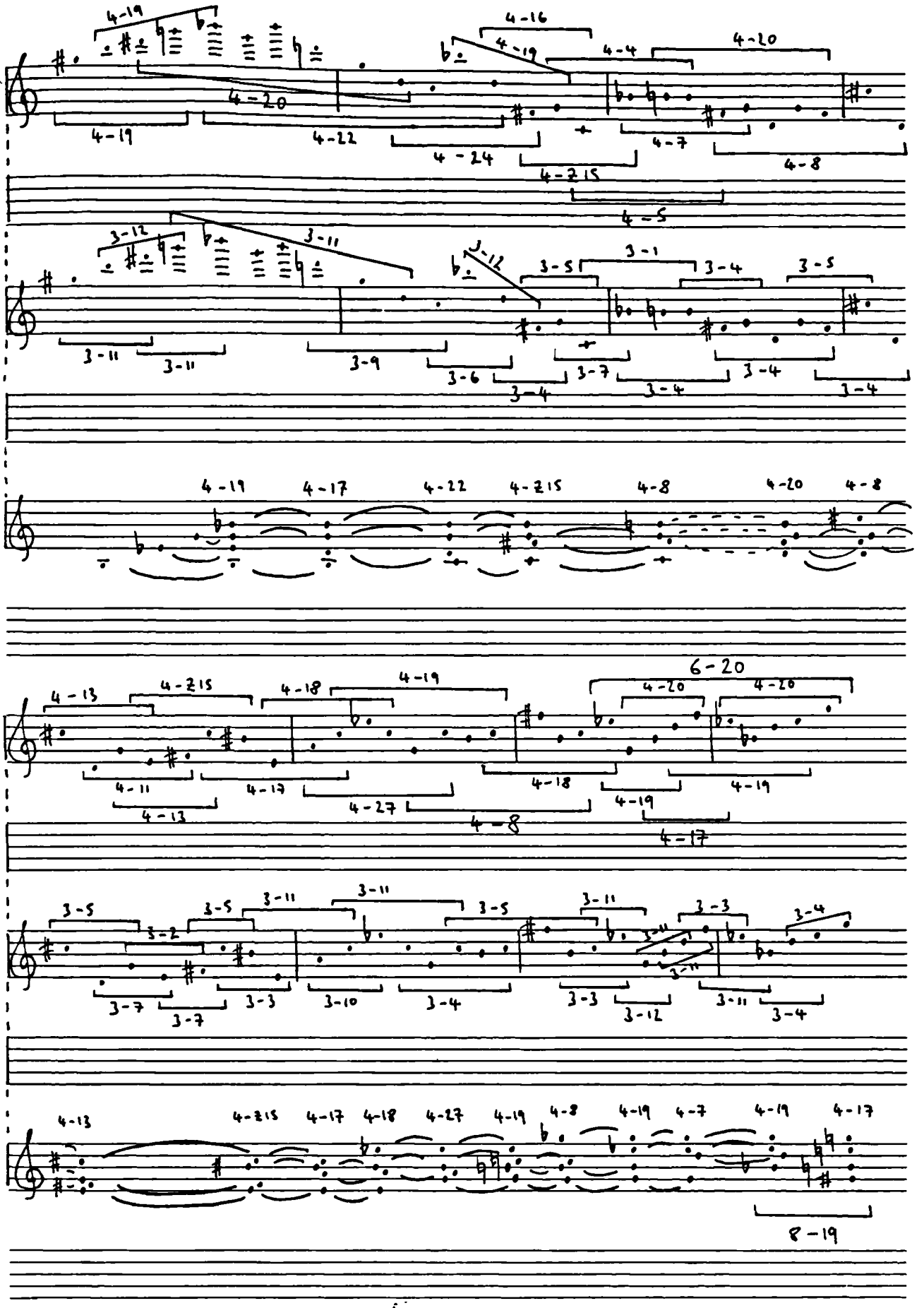
PAN-A4 12 STAVE

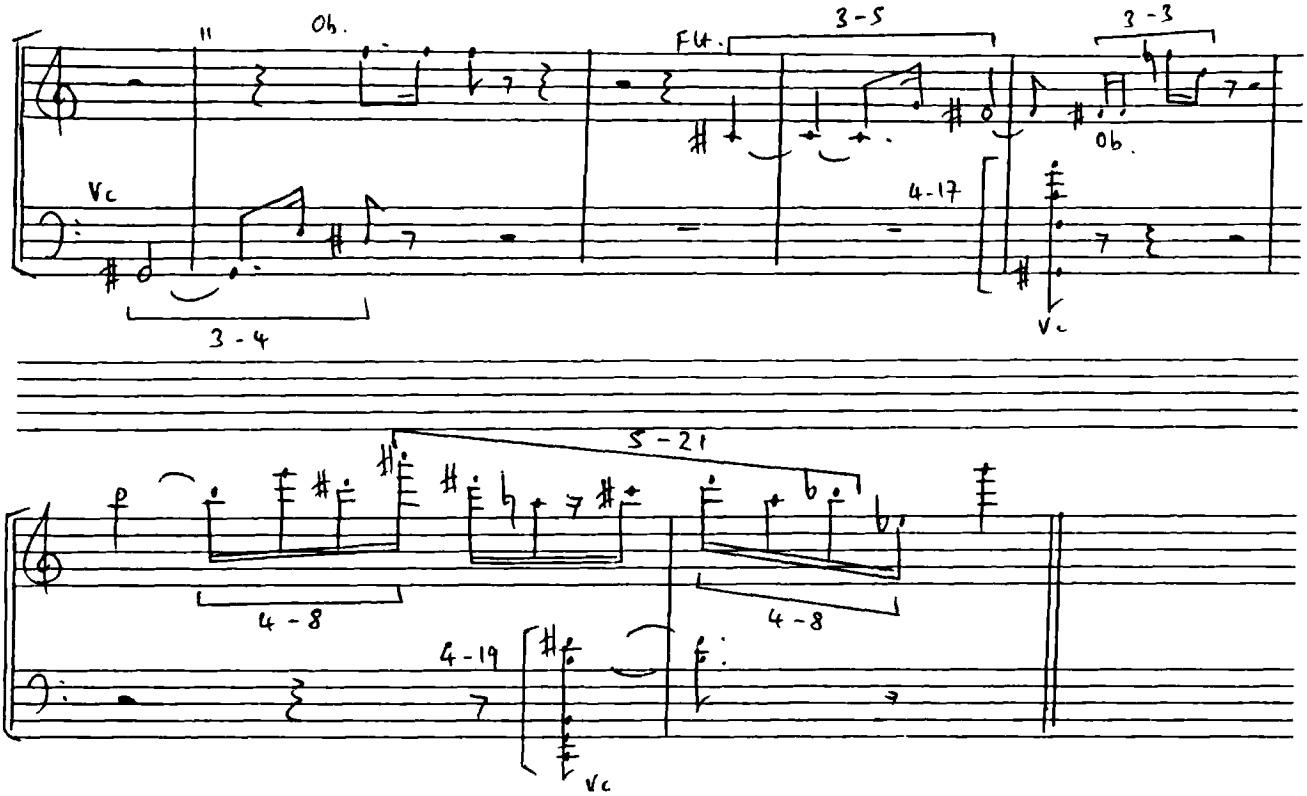

4-7
4-19
4-19
3-2
3-3
3-2



PAN-A4 12 STAVE

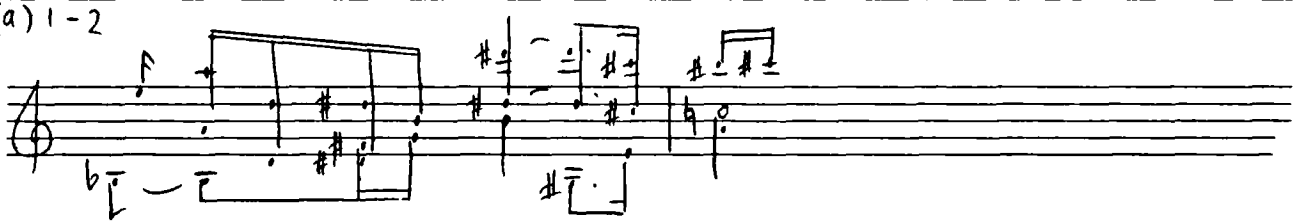
Ex. 10. 11 Quartet Sonata, I, 9-15 Hpschd. (+ Fl. 9-10)



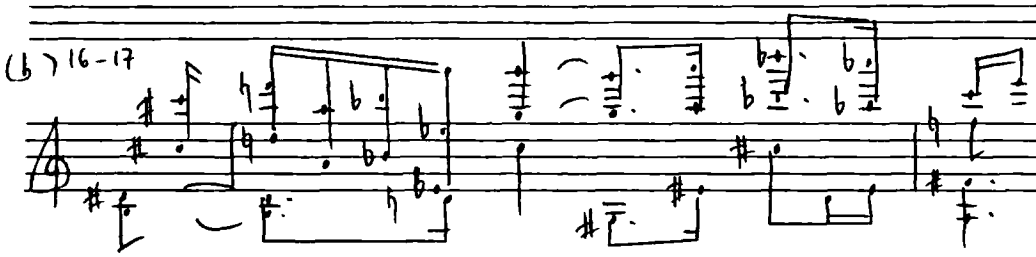


Ex. 10.13, Quartet Sonata, I

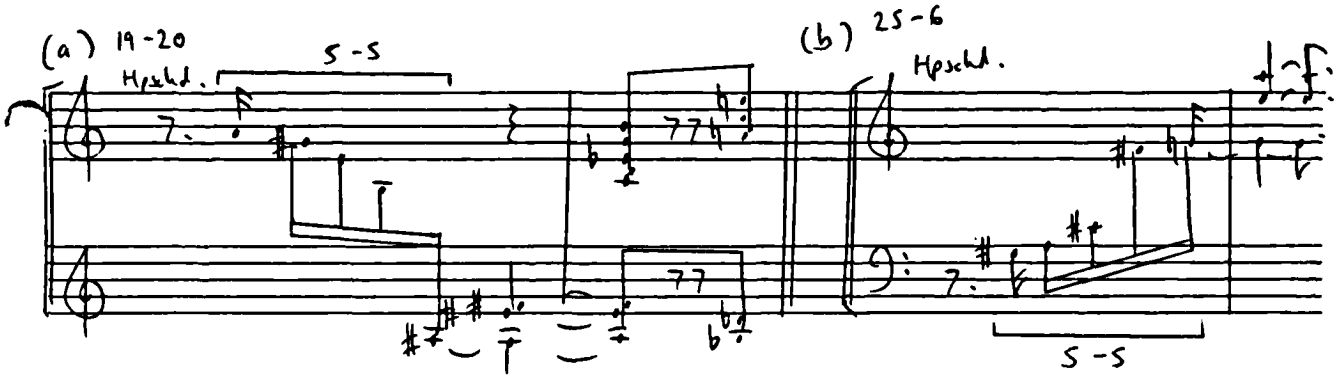
(a) 1-2



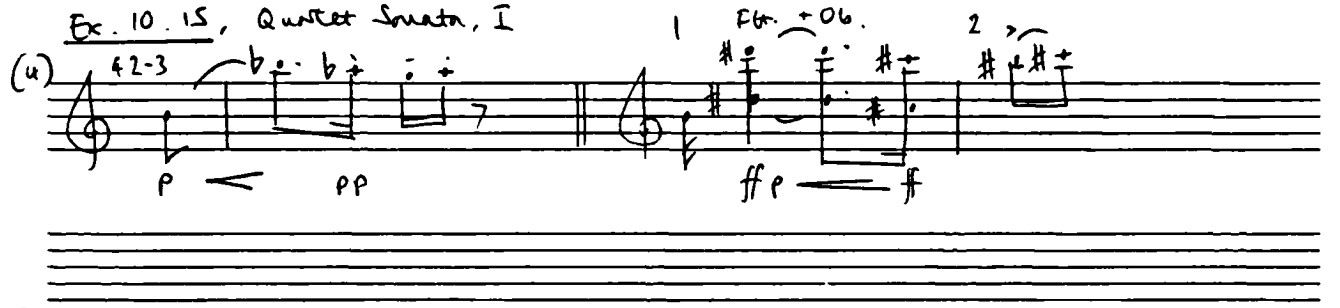
(b) 16-17

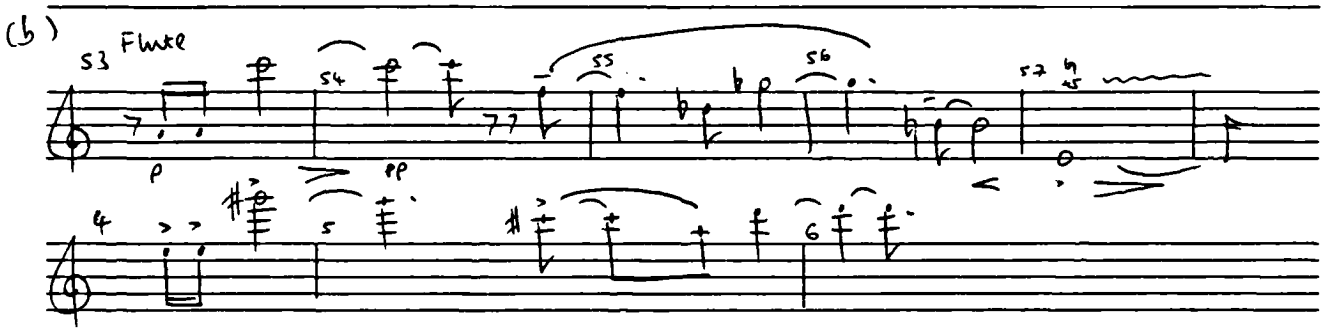


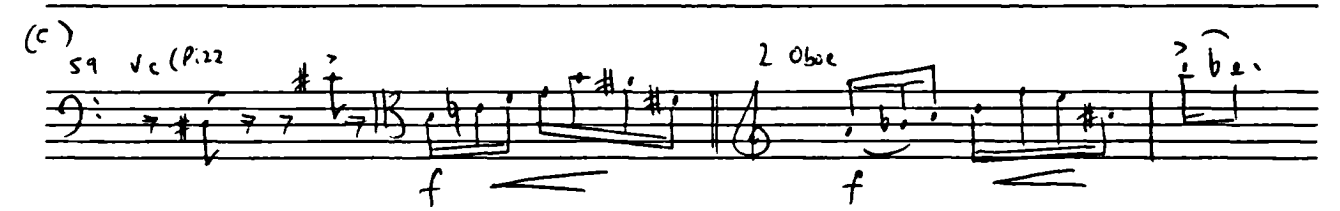
Ex. 10.14, Quartet Sonata, I



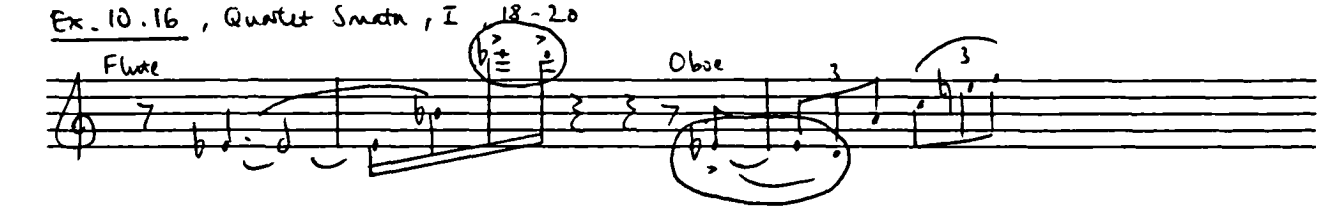
Ex. 10.15, Quartet Sonata, I

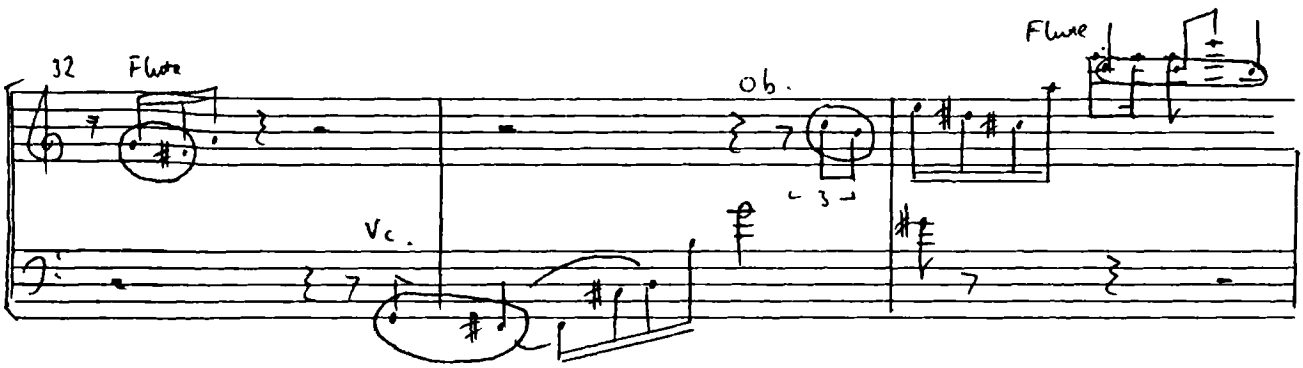






Ex. 10.16, Quartet Sonata, I 18-20





Ex. 10.18, Quartet Sonata, I